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A
GEOGRAPHICAL AND ASTRONOMICAL
ATLAS,

CONTAINING

Ancient and Modern Maps,

WITH A

SOLAR SYSTEM AND TWO HEMISPHERES,

PREFACED BY

NEW PROBLEMS ON MAPS,

AND A COPIOUS TABLE OF

LATITUDES AND LONGITUDES,

Serving also as a Companion to the Geographical Copy-Books.

BY THE

REV. J. GOLDSMITH,

AUTHOR OF THE GRAMMARS OF GENERAL, AND OF BRITISH
GEOGRAPHY, OF THE GEOGRAPHICAL COPY-BOOKS,
THE BIOGRAPHICAL CLASS-BOOK, &c.

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July 19. 1864

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PREFACE.

Nothing need be urged to enforce the adoption and preference of an improved and superior Atlas, which also combines the recommendation of economy in its price.

Nor are those the only qualities of the Atlas here submitted to the public, the maps serving not only as subjects of reference, but being finished performances on the exact scale on which the SETS OF GEOGRAPHICAL COPY-BOOKS are skeletons, and, in filling up which they become copies for the use of the student.

This Atlas, therefore, perfects the scheme of teaching geography by filling up the Skeletons of Maps.

To this edition the Author has the satisfaction to be able to add a *novelty* of singular worth, and in regard to which he flatters himself he shall be honoured with the approbation and congratulations of all tutors. He has invented a series of TWENTY-FOUR PROBLEMS ON MAPS, which may be pleasantly solved by Maps as well as Globes; and which are more useful than those on globes, because Maps are in general circulation, and are objects of more frequent consultation. With what different degrees of intelligence will one who has worked these problems consult a map, from one who only knows generally that a map represents the face and relations of a country!

The able Schoolmaster and Governess will at once seize on these Problems as precious additions to the study of Geography, and the USE OF MAPS will, at least, rank in future among liberal arts, by the side of the Use of the Globes.

The Table of Latitudes and Longitudes will be found one of the most perfect in the language, being compiled from those given in the Requisite Tables of the Board of Longitude, and the *Connaissance des Tems, pour l'an,* 1823. Such a complete Table will serve for permanent reference besides its temporary use in filling up the GEOGRAPHICAL COPY-BOOKS.

As the various works of the Author have uniformly been copied and pirated by that inferior tribe of compilers, who are as unable to *equal*, or *improve*, as they were to *invent*, it is more than probable, that half a dozen imitations will speedily appear of these PROBLEMS ON MAPS. Against such piracies there exists no protection but in the moral feelings, and sense of justice of Schoolmasters and the Public. The author trusts, however, that this notice will operate as some additional security. He has, moreover, entered his work at STATIONERS' HALL.

London, July, 1823.

CONTENTS.

Page

Definitions, &c. vii

PROBLEMS OF MAPS.

Prob. I. To determine the Latitude of any place xvi

—— II. To determine the Longitude of any place xvii

—— III. To find a place on different maps, having its Latitude and Longitude given xviii

—— IV. To determine the Zone and Climate of any given place ... xix

—— V. To determine the bearing of one place to another .... ib.

—— VI. To find the Antipodes of any place by the circular Map of the World xx

—— VII. To determine the distance of two places in miles xxi

—— VIII. To determine the days on which the sun passes vertical in a given place, within the tropics .... xxi.

—— IX. On a given day, to determine the various places over which the sun passes vertical on that day xxiv

—— X. To determine the length of the longest and shortest day at a given place xxv

—— XI. To determine all the places, in both hemispheres, at which the longest day is of a given length .... ib.

—— XII. To determine the number of days in which the sun shines constantly at any place in the Frigid Zones .... ib

—— XIII. To determine at what places, in either Frigid Zone, the period of continued day and night is commencing on a given day xxvi

—— XIV. To determine the difference of time between any two places ib.

—— XV. The hour being given at one place, to determine at what place it is a given hour xxvii

—— XVI. To determine where the sun is vertical at a given hour ... xxviii

—— XVII. To determine how high the sun is at noon on a given day at a given place .... ib.

—— XVIII. To determine how high the sun is above the horizon at a given place, at a given hour in the day-time xxix

—— XIX. The height of the sun at noon, on a given day, being known, to determine the latitude of the place xxx

—— XX. To ascertain all the countries in the world where the sun is shining, or it is day; where it is noon; where it is afternoon; and where it is rising and setting, at a given hour and day .... ib.

—— XXI. The difference of time of a celestial observation being known, to find the longitude of a place xxxii

—— XXII. The time being calculated for the commencement, middle, and end, of an eclipse of the moon, at Greenwich, to ascertain to what countries in the world the commencement only can be seen; to what countries the commencement and middle; and to what countries of the whole of the phenomena xxxiii

—— XXIII. Which is the highest land in a map or country xxxv

—— XXIV. Is the fall of the high land in a country rapid or gradual, or has it successive hills between the sources of rivers and the sea? .... ib

PROBLEMS ON THE CONSTRUCTION OF MAPS. Page

Prob. XXV. To construct a Map of the World, on the plane of a meridian, according to the globular projection of the sphere xxxvii
—— XXVI. To project a Map of the World, on the plane of a meridian, according to the *stereographic projection* of the sphere ... xxxix
—— XXVII. To draw a Map of the Earth, on the plane of a meridian, according to the *globular projection* of the sphere ...... ib.
—— XXVIII. To project a Map of the Earth stereographically, according to the *horizontal projection* of the sphere, and answering to the latitude of London xli
—— XXIX. By the globular projection of the sphere, to construct a Map with *azimuth* lines, to shew the *bearing* and *distance* of all places within the map, from London, or any other given place, in the centre xlii
—— XXX. To construct a Map of the World, on the plane of the meridian according to the *orthographic projection* of the sphere xliii
—— XXXI. To project, on the plane of the equator, a Map of the World, according to the *globular projection* of the sphere xliv
—— XXXII. To construct a Map of the World, on the plane of the equator, according to the *stereographic projection* of the sphere xlv
—— XXXIII. To project a Map, on the plane of the equator, according to the *orthographic projection* of the sphere .... ib.
—— XXXIV. To project a Map of Asia, according to the globular projection xlvi
—— XXXV. To project a Map of a particular portion of the earth's surface, as of Italy, containing 6° of latitude (viz. from the 39th to the 45th degree,) and 9° of longitude (viz. from the 7th to the 16th of east longitude) xlvii
—— XXXVI. To project a Map of Europe xlix
—— XXXVII. To construct a Map, which shall contain the degrees of longitude and latitude of Great Britain l
—— XXXVIII. To construct Mercator's Chart of the World li

PLATE I. Projections on the Plane of a Meridian xl
—— II. Projections on the Plane of a Meridian xlii
—— III. Projections on the Plane of the Equator xlvi
—— IV. Projections of Partial Maps xlviii
Tables of Latitude and Longitude 1

MAPS.

1. MAP OF THE WORLD, on the Stereographic Projection
2. —— OF THE WORLD, on MERCATOR'S Projection
3. —— OF EUROPE
4. —— OF ASIA
5. —— OF AFRICA
6. —— OF NORTH AMERICA
7. —— OF SOUTH AMERICA
8. —— OF THE WEST-INDIES
9. —— OF HINDOSTAN
10. —— OF ENGLAND
11. —— OF SCOTLAND
12. —— OF IRELAND
13. —— OF THE ROMAN WORLD
14. —— OF ANCIENT GREECE
15. —— OF PALESTINE
16. —— SOLAR SYSTEM
17. —— NORTHERN CONSTELLATION
18. —— SOUTHERN CONSTELLATION.

OF MAPS.

GENERAL DEFINITIONS, &c.

1. A **Map** is a representation of the figure of a country, drawn on a given scale, to which all the parts bear, or ought to bear, their natural proportions.

Observation. The first idea of a Map will be best conveyed to young persons by the plot or plan of an estate, house, or town, the parts of which are familiar, and the idea will then be easily extended to a district, county, or kingdom.

2. All maps are drawn of some convenient scale, which is generally laid down in one of the corners, or expressed at the sides.

Obs. Plans of houses are often drawn an inch for a foot; and of estates, an inch for a yard; of counties, an inch for a mile; and of large portions of the world an inch for a degree. The scale is made to vary in proportion to the size of the county, and the size in which it is proposed to draw the plan or map.

3. Maps represent the natural figure of a country, in its exact proportions; also its rivers, coasts, and often its mountains.

Obs. All maps have their origin in actual surveys and observations, and on the number and accuracy of these depend the value of the maps. A surveyor must measure an estate before he can draw a plan; so a geographer or map-drawer must have actual surveys made, or certain points accurately determined, before he can draw a map. All maps have been drawn originally from actual surveys; but these have often been very imperfect; and it is the constant business of geographers to get better surveys, and to correct uncertain maps. It is only within these few years that Great Britain was accurately surveyed by Generals Roy and Mudge; the example having been set, in regard to several other countries in Europe, by their respective governments. A more expeditious mode of correcting and verifying maps, is, by observing the position of places on the globe, with references to the Sun, Moon, and Stars. These are unerring objects, placed at immense distances from the earth, and their positions, in relation to different places, accurately determine the relative position of the places themselves. As the earth turns round the same stars always pass over the same places, and arrive at equal heights from the horizon;

hence, by measuring the difference of heights of the same star at different places, we ascertain the varied position of the places themselves.

4. The perfection of maps, and of all representations of the surface of countries, depends on the accuracy of the surveys made for the purpose; or on the number of places, whose relative position has been determined by observations of the distant heavenly bodies.

OF LATITUDE.

5. The relative position of places, northward or southward, is called their LATITUDE; and their relative position, eastward or westward, is called their LONGITUDE.

6. The globe of the earth in its diurnal motion turns on a central line, called *its axis;* and the two external points of the *axis* are called the NORTH and the SOUTH POLES.

7. The part of the globe which is at *equal* distances from the North and the South Pole, is called the EQUATOR, and this *equidistant* point is usually marked by a distinct line in all maps of countries that are *equidistant* from both poles.

Obs. See the Map of Africa, of South America, and of the World.

8. The equator serves as a standard to measure from towards either Pole. The distance is called *Latitude,* and as it inclines towards the *North* or *South* Pole, it is called *North* or *South* Latitude.

Obs. The top of maps being usually the *North,* and the bottom the *South,* the figures at the side of maps expressing the distance from the Equator, *increase* from the bottom to the top, when the Latitude is *North;* and from top towards the bottom when the Latitude is *South. See the Map of the World and the Map of Africa, for exemplifications.*

9. The distance from the Equator to either Pole is divided into ninety parts, called DEGREES; these again are subdivided into sixty minutes, or sixty geographical miles each. Each degree, however, is nearly sixty-nine one-tenth of English statute miles.

Obs. By the late admeasurement of the French mathematicians, the mean or average degree is fixed at 364,814 English feet, or sixty-nine miles, one-tenth; and, by the late survey of England, it was fixed at sixty-nine miles one-eighth in this latitude, where the degree is longer, owing to the flattening of the earth nearer the Poles. The true circumference of the earth, therefore, is 24,873¾ miles; and the diameter 7917 miles. *On this subject see further useful particulars in Joyce's Arithmetic.*

10. The lines on maps which run from side to side are parallel

to the equator, and intended to express the Latitude of all places near them, and to guide the eye from the intermediate places to the figures on the side of the map. Such lines, therefore, are called *parallels of Latitude.*

Obs. 1. In the map of England, for example, the lines from 50 to 50, 51 to 51, 52 to 52, &c. &c. are parallels of Latitude. Those figures indicate that the places on the lines are in 50, 51, 52, &c. &c. *degrees of Latitude.* And as the figures increase from the bottom upward, the Latitude is of course *north*

2. The eye and the finger, or a ruler, will indicate the Latitude of the intermediate spaces; but for this purpose, it is necessary to observe the *divisions* of each degree.

For example:—Between 54° and 55°, in the *map of England,* it may be observed, that each degree is divided by an extended stroke into *half,* or 30 minutes (30′); and each half into three parts, or 10 each.

In the *map of the West Indies,* each parallel expresses 5°, and there being five divisions, of course each is one degree, and the parts of a degree must be guessed by the eye.

In the *map of South America,* the parallels have 10 degrees between each, and these are divided into five parts, or two degrees each.

In the *map of the World,* the parallels express every 10 degrees, and then each is divided into ten parts, expressive of a degree in each.

In many large maps of small districts, every minute of a degree is expressed, and in such the parallels of Latitude are generally omitted, but may be supplied with a thread or a ruler

OF LONGITUDE.

11. Distance, east or west, is called *Longitude;* but as there is no centre, or natural division, from which to count eastward or westward, a place is assumed, as *Greenwich* in England, from whose meridian *Longitude* is reckoned.

12. That the reckoning of *Longitude* may be universal, the distance is counted from the meridian of Greenwich; and the distance of the *meridian* of one place from the *meridian* of another place, measured in parts of 360 degrees, or of 24 hours, expresses the longitude.

Obs. Every place, and every person, has a *meridian,* which is the line passing through or over the place, or person, from the North Pole to the South Pole. It is evident that a line may be supposed to be drawn through every spot on the globe, from one pole to the other; such line, then, is the *meridian* of that spot; and the distance of that meridian from the *similar* meridian of *Greenwich,* is the *longitude* of that spot.

12. The circumference of the earth, whether taken round the poles, or round the equator, is 360 degrees. Those from pole to pole, measure *latitude,* north or south; but those round the equator measure *longitude,* east or west, from meridian to meridian. Degrees of latitude are necessarily uniform in length, but degrees of longitude diminish in length from the equator to the poles.

Obs. 1. See the map of the world, where it will be observed that the *meridians* which, at the equator, are as distant as the parallels of latitude, approach closer and closer as they approach the poles.

2. The following Table expresses the length, in geographical and statute miles, of a degree of longitude, in every degree of latitude.

LENGTH OF DEGREES OF LONGITUDE.

Deg. Lat.	Geog. Miles.	English Miles.	Deg. Lat.	Geog. Miles.	English Miles.	Deg. Lat.	Geog. Miles.	English Miles.
1	59·99	69·06	31	51·43	59·13	61	29·09	33·45
2	59·96	69·03	32	50·88	58·51	62	28·17	32·40
3	59·92	68·97	33	50·32	57·87	63	27·24	31·33
4	59·85	68·90	34	49·74	57·20	64	26·30	30·24
5	59·77	68·81	35	49·15	56·51	65	25·36	29·15
6	59·67	68·62	36	48·54	55·81	66	24·40	28·06
7	59·55	68·48	37	47·92	55·10	67	23·45	26·96
8	59·42	68·31	38	47·28	54·37	68	22·48	25·85
9	59·26	68·15	39	46·63	53·62	69	21·50	24·73
10	59·09	67·95	40	45·96	52·85	70	20·52	23·60
11	58·89	67·73	41	45·28	52·07	71	19·53	22·47
12	58·69	67·48	42	44·59	51·27	72	18·54	21·32
13	58·46	67·21	43	43·88	50·46	73	17·54	20·17
14	58·22	66·95	44	43·16	49·63	74	16·54	19·02
15	57·95	66·65	45	42·43	48·78	75	15·53	17·86
16	57·67	66·31	46	41·68	47·93	76	14·52	16·70
17	57·38	65·98	47	40·92	47·06	77	13·50	15·52
18	57·06	65·62	48	40·15	46·16	78	12·48	14·35
19	56·73	65·24	49	39·36	45·26	79	11·45	13·17
20	56·38	64·84	50	38·57	44·35	80	10·42	11·98
21	56·01	64·42	51	37·76	43·42	81	9·38	10·79
22	55·63	63·97	52	36·94	42·48	82	8·35	9·59
23	55·23	63·51	53	36·11	41·53	83	7·31	8·41
24	54·81	63·03	54	35·27	40·56	84	6·27	7·21
25	54·38	62·53	55	34·41	39·58	85	5·22	6·00
26	53·93	62·02	56	33·53	38·58	86	4·18	4·81
27	53·46	61·48	57	32·68	37·58	87	3·14	3·61
28	52·97	60·93	58	31·79	36·57	88	2·09	2·41
29	52·48	60·35	59	30·99	35·54	89	1·05	1·21
30	51·96	59·75	60	30·00	34·50	90	0·00	0·00

may be considered in nature nearly as a flat; but the distortion will be great in representing a quarter of the world, or in a whole hemisphere.

Obs. 1. On turning to the map of the world, which is intended to represent two sides of the globe, it is evident that the *strait* lines, or meridians, which join the poles, ought to be as circular as the external circle of the map. The diameter, therefore, is given for the half circumference, and all the countries in the centre of the map can be only two-thirds of their proper size.

2. In truth, all straight lines on maps ought to be convex, and the countries under them differ from their true shape in the proportion of the lost convexity, which is greater or less in proportion to the size of the country represented.

SCALES OF DISTANCES.

17. It is difficult, in consequence of the undue abridgment of the centre of maps of large surfaces, to measure distances on them with any degree of accuracy; but maps of smaller surfaces are provided with scales of miles, or parts of degrees, by which any distance may be measured with tolerable precision.

Obs. 1. General methods of ascertaining distances on the surface of Maps will be given hereafter.

2. On the map of South America will be found a scale of 1000 miles; on that of Palestine, of 40; on that of Ireland, a scale of 50; and so with others.

3. To ascertain travelling distances by roads, it is necessary to know the proportion of some one road distance to its map distance, and then, by the rule of proportion, the road distance of any other place can be ascertained by its map distance. Thus, if it is 40 miles from A. to B. by the map, but 50 miles by the public road, and the distance from A. to C. is 80 miles by the map, it is evident that the road distance from it to C. will be about 100 miles.

4. Twelve miles in 100 may be generally allowed for the difference between the geographical and the road distance.

OF THE NATURAL FACE OF A COUNTRY.

18. Maps give accurate delineations of rivers, and often pourtray ridges of mountains. The sources of rivers, however, also indicate the highest land; their course, the fall of land; their direct

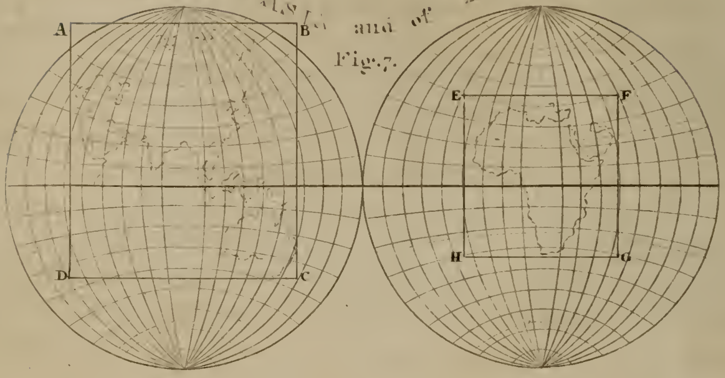
CONSTRUCTION OF MAPS.

Plate 2. p.580.

Globular Projection

of A MAP of ASIA and of AFRICA.

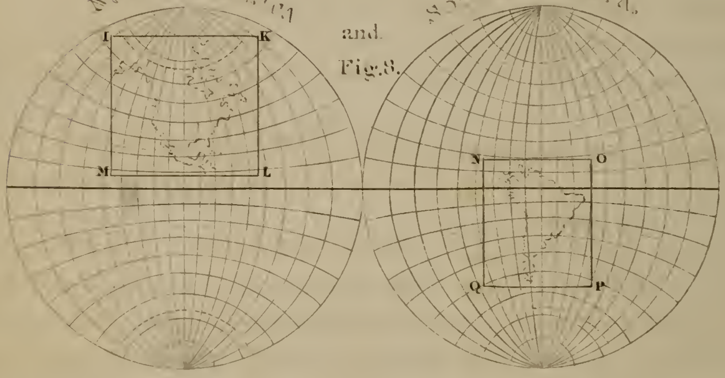
Fig. 7.



Stereographic Projection

of a Map of NORTH AMERICA and SOUTH AMERICA.

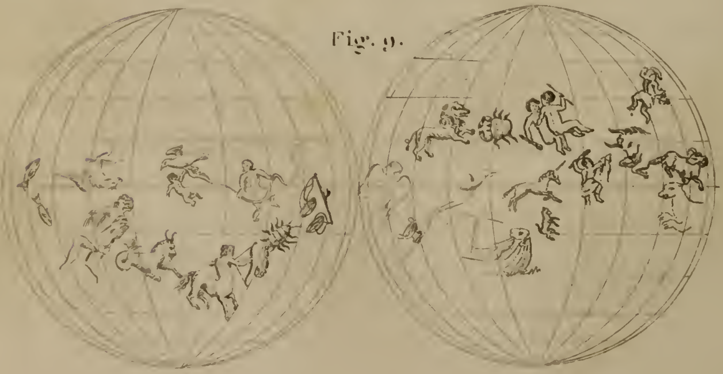
Fig. 8.



Orthographic Projection

of a Celestial Map.

Fig. 9.



course, a long valley; their winding course, continued inequalities; and their fall into the sea, comparative low land.

Obs. 1. An attention to the rivers in a map will, therefore, indicate all the peculiarities in a country as perfectly as the description of a traveller.

2. The method of laying down mountainous land does not distinguish with precision the height and consequence of the hills, but some judgment may be formed from a combined attention to the sources and courses of rivers.

3. Lakes indicate the want of a sufficient fall, or channel, between their site and the sea.

19. In all maps the place is indicated by a small circle o, which stands near the beginning or end of the name. The centre of that small circle corresponds exactly with the Latitude and Longitude of the place. Large cities are sometimes indicated by the outline of a castle, or by a plan; and generally large places are distinguished from small ones by the character in which the name is engraved, as LONDON, Birmingham, Barnet, *Hammersmith;* indicating, that LONDON is a metropolis; Birmingham a town of the second magnitude; Barnet a third or fourth rate town; and *Hammersmith* a village or hamlet.

Obs. Such change of characters depends, however, on the scale of the map, the subordination being kept up, from great to small, at whatever part in the gradation the map begins.

20. Mountains are indicated by deeply-shaded ridges; hills by lighter and narrowed shades, single hills by circular shadows, rivers and canals by double lines, and rivulets by single lines. Roads also admit of varieties of double and single lines, which are generally explained in the corner of the map.

SUN'S DECLINATION.

21. In Article 23, the phenomena produced in the Frigid Zone, by the Sun's change of declination, North or South, is described. The progress of his ascent and descent is exactly detailed in the following table; and it will be found very useful in solving some pleasant problems on the maps.

SUN'S DECLINATION.

NORTH.

……*Tropic of Cancer*……

June 21	June 21..23½°
June 10	July 3..23
June 1	July 12..22
May 26	July 19..21
May 21	July 24..20
May 16	July 28..19
May 12	Aug. 1..18
May 8	Aug. 5..17
May 5	Aug. 9..16
May 1	Aug. 13..15
April 28	Aug. 16..14
April 25	Aug. 19..13
April 22	Aug. 22..12
April 19	Aug. 27..11
April 16	Aug. 28..10
April 14	Aug. 30.. 9
April 11	Sept. 2.. 3
April 8	Sept. 5.. 7
April 6	Sept. 8.. 6
April 3	Sept. 10.. 5
March 31	Sept. 13.. 4
March 28	Sept. 16.. 3
March 26	Sept. 18.. 2
March 23	Sept. 28.. 1

EQUATOR.

Sept. 23.. °	March 21
Sept. 26.. 1	March 18
Sept. 28.. 2	March 16
Oct. 1.. 3	March 13
Oct. 4.. 4	March 11
Oct. 6.. 5	March 8
Oct. 9.. 6	March 6
Oct. 11.. 7	March 3
Oct. 14.. 8	February 28
Oct. 17.. 9	February 26
Oct. 19..10	February 23
Oct. 22..11	February 20
Oct. 25..12	February 17
Oct. 28..13	February 14
Oct. 31..14	February 11
Nov. 3..15	February 8
Nov. 6..16	February 5
Nov. 10..17	February 2
Nov. 14..18	January 29
Nov. 17..19	January 25
Nov. 22..20	January 21
Nov. 27..21	January 16
Dec. 3..22	January 10
Dec. 21..23½	Decem. 22

……*Tropic of Capricorn*……

SOUTH.

OF ZONES AND CLIMATES.

22. The Zones of the earth indicate some peculiarity in the temperature, or phenomena of the sun. There are three kinds of zones: the Torrid, or burning; the Frigid, or freezing; and the Temperate, or mild.

23. The equator passes through the middle of the Torrid Zone. This Zone extends 23½ degrees to the *North*, or Tropic of Cancer; and 23½ degrees to the *South*, or Tropic of Capricorn; and is consequently 47° wide. The sun is always perpendicularly over head, in some part of this zone. During our summer months, he ascends and decends to the north of the equator; and during our winter months, he descends and ascends south of the equator. Of course the Torrid Zone is the hottest part of the earth.

24. The Frigid Zone is that space, 23½ degrees round each pole, in which, during some day of the year, the sun never sets; and in the opposite season, never rises during one entire day. The sun always shines *ninety* degrees from the place where he is vertical; so that when he is vertical over the equator, he illuminates both poles. But as he ascends above the equator, he leaves the South Pole in darkness, and makes constant day at the North Pole; and as he decends below the equator, he produces effects directly opposite. The Frigid Zone is of course the coldest portion of the earth.

25. The Temperate Zone is the parallel in both hemispheres, which lies between the Torrid Zone and the two Frigid Zones. As the Frigid Zone extends 23½ degrees from the poles, and the Torrid 23½ degrees from the equator, making 47 degrees, the Temperate Zones are 43 degrees wide, lying between 23½ of Latitude, and 66½ north and south. The Temperate Zone is characterized by its name, and is the most favourable to animal and vegetable life.

Obs. If the earth's entire surface be 1000 parts, the frigid zones occupy 83; the temperate 519; and the torrid 398 parts.

26. The surface of the earth has also been divided into Climates, or parallel spaces, in which each has its longest day half an hour longer, and its shortest day half an hour shorter, than the next adjoining climate. This division is of use in no other sense than with

reference to the length of the longest day; heat and cold depending much on local circumstances.

Obs. The following is a table of climates, which may be taken north and south, from the equator towards either pole.

Climate.	*Ends in Latitude*		*Length of the longest Day is*		*Climate.*	*Ends in Latitude*		*Length of the longest Day is*	
	D.	M.	H.	M.		D.	M.	H.	M.
I	8	34	12	30	XIII	59	59	18	30
II	16	44	13	—	XIV	61	18	19	—
III	24	12	13	30	XV	62	26	19	30
IV	30	48	14	—	XVI	63	22	20	—
V	36	31	14	30	XVII	64	10	20	30
VI	41	24	15	—	XVIII	64	50	21	—
VII	45	32	15	30	XIX	65	22	21	30
VIII	49	2	16	—	XX	65	48	22	—
IX	51	59	16	30	XXI	66	5	22	30
X	54	30	17	—	XXII	66	21	23	—
XI	56	38	17	30	XXIII	66	29	23	30
XII	58	27	18	—	XXIV	66	32	24	—

CLIMATES between the POLAR CIRCLES and the POLES, distinguished by Months.

Climate.	*Ends in Latitude*		*Length of the longest Day is*		*Climate.*	*Ends in Latitude*		*Length of the longest Day is*	
	D.	M.	Dys.	M.		D.	M.	Dys.	M.
XXV	67	18	30	or 1	XXVIII	77	40	120	or 4
XXVI	69	33	60	— 2	XXIX	82	59	150	— 5
XXVII	73	5	90	— 3	XXX	90	—	180	— 6

PROBLEMS ON MAPS.

PROBLEM I.

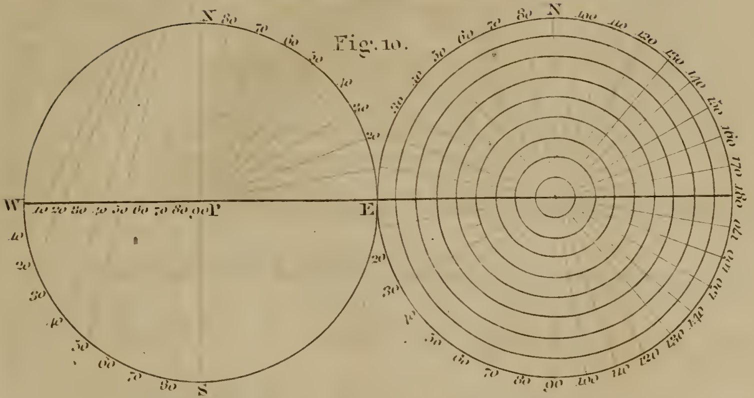
TO DETERMINE THE LATITUDE OF ANY PLACE.

VARIETY I. *When the Equator is in the Map.*

Rule.—Carry your eye, or finger, or a pair of compasses, from the place between the parallels of latitude to either side of the map, and estimate the degree, and part of a degree, as nearly as possible.

Globular Projection of a Map of the World, *on the plane of the Equator.*

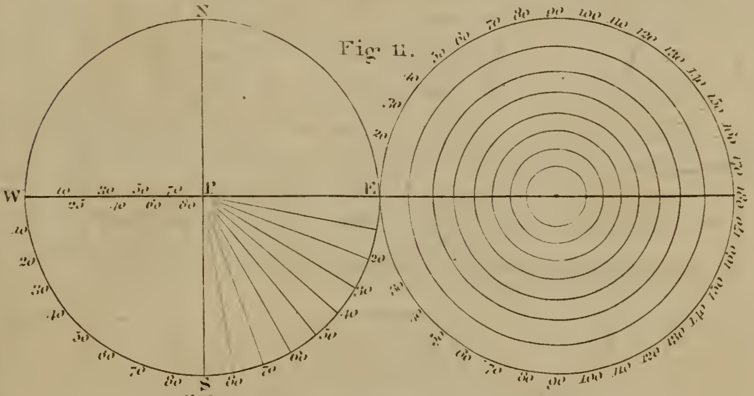
Fig. 10.



No. 1 No. 2

Stereographic Projection of a Map of the World *on the plane of the Equator.*

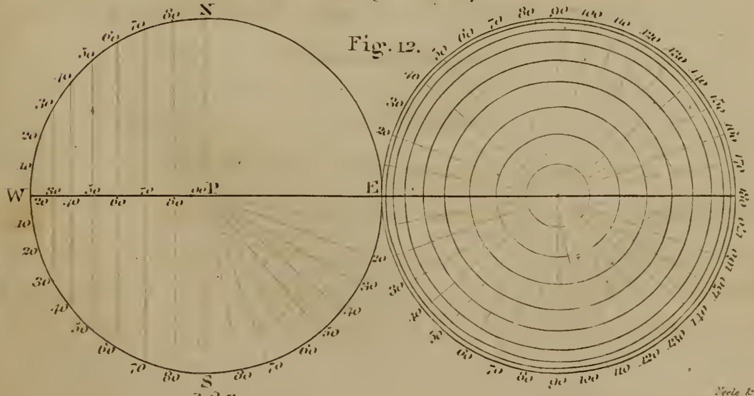
Fig. 11.



No. 1 No. 2

Orthographic Projection of a Map of the World *on the plane of the Equator.*

Fig. 12.



No. 1 No. 2

Neele & Son 352 Strand.

Example 1. Required by the same Map the Longitude of Carthage, Gades, and Memphis.

2. By the Map of England, the Longitude of Canterbury, Birmingham, and York.

3. By the Map of Europe, the Longitude of Paris, Madrid, and Constantinople.

4. By the Mercator's World, the Longitude of Washington, Calcutta, and Madeira.

VARIETY II. *When the first Meridian of Greenwich is not in the Map.*

Rule.—Observe whether the figures increase to the left or west; or to the right or east.

Example 1. Required in the Map of Scotland, the Longitude of Edinburgh, Elgin, and Stornaway.

2. The Longitude in the Map of Hindostan, of Candi, Bombay, and Cabul.

3. The Longitude in the Map of Palestine, of Joppa, Ashtaroth, and Shiloh.

4. In the Map of South America, the Longitude of Monte Video, Potosi, and Rio Janeiro.

5. In the Map of Ireland, of Cork, Limerick, and Belfast.

PROBLEM III.

TO FIND A PLACE ON DIFFERENT MAPS, HAVING ITS LATITUDE AND LONGITUDE GIVEN.

Rule.—Place one finger on the given Latitude, and the other on the given Longitude; and move them evenly between the parallels and meridians, till they meet at the place required.

Example 1. Find that place in the maps of Hindostan and Asia, which is in 21° of N. Lat. and 72¼ E. Long.

2. Find that place on the same maps, and on the two Maps of the World, which lies in 13° N. Lat. and 80½ E. Long.

3. Find that place on the Maps of Africa and the World, which lies in 9° N. Lat. and 12½ of E. Longitude.

4. Find that place which, in the Maps of the West Indies and the World, lies 18½ of N. Lat. and 70¼ of West Long.

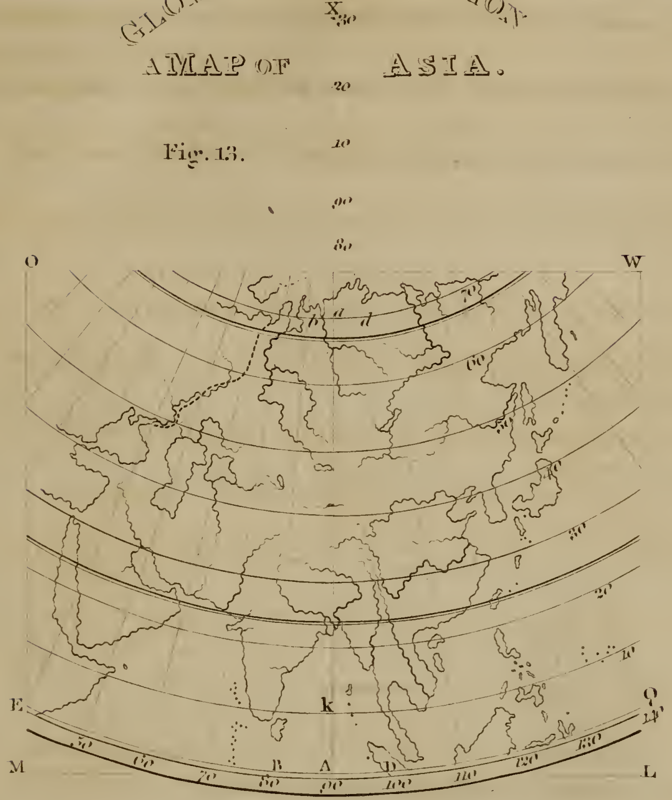
5. Find that place in the Maps of England and Europe, which lies in 51¾° N. Lat. and in 1¼ W Long.

6. Find that place, in the Maps of Africa and the World, which lies in 5° S. Lat. and 6 W. Long.

CONSTRUCTION OF MAPS

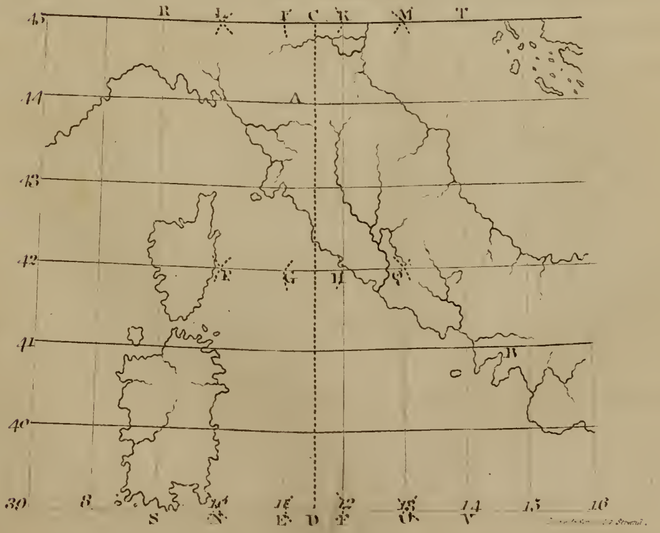
GLOBULAR PROJECTION (of) A MAP OF ASIA.

Fig. 13.



PROJECTION of a MAP of ITALY

Fig. 14.



7. Where is that spot, in the Maps of Africa and the World, which has no Latitude or Longitude ?

8. Find that place, in the two Maps of the World, which has 158° W. Long. and 3° N. Lat.

9. Find that place, on the Maps of the World, which has 280. S. Lat. and 163 E. Long.

10. Find that island, in the Pacific Ocean, which has 144° West Long. and 16° S. L.

PROBLEM IV.

TO DETERMINE THE ZONE AND CLIMATE OF ANY GIVEN PLACE.

Rule.—By Art. 23, 24, and 25, the width of the Zones is given, and by the table at Art. 26, the Latitude of the different climates; ascertain, therefore, the Latitude of the place, and then distinguish the Zone and Climate.

For example, as Constantinople in Turkey is in 41° of North Latitude, and the Torrid Zone ends at 23½° of N. Lat; and the Frigid Zone, does not commence till 66½° of N. Lat. that city is in the *Temperate* Zone; and as by the table the *fifth* climate begins at Lat. 36° 31′, and ends at 41° 24″, Constantinople is in the *fifth* climate.

Example 1. In what Zone and climate lies Archangel, in Russia ?

2. In what Zone and climate lies Otaheite, in the Pacific Ocean ?

3. In what Zone and climate lies the Cape of Good Hope, in Africa ?

4. In what Zone and climate lies the North of Baffin's Bay, in North America ?

5. In what Zone and climate lie London and Edinburgh ?

6. In what Zone and climate lie Calcutta and Jamaica ?

PROBLEM V.

TO DETERMINE THE BEARING OF ONE PLACE TO ANOTHER.

Rule.—This in general Maps can only be done on the Mercator's projection, by drawing a pencil line between the places, and examining by a ruler which of the lines, in either of the compasses, it lies parallel to. On smaller Maps, in which the lines of lat. and long. run nearly parallel, a compass may be made or supposed, as over Ireland, the West Indies, &c.

Example 1. By Mercator's World, what is the bearing of Madeira from Barbadoes ?

2. By the same, what is the bearing from the Cape of Good Hope to St Helena ?

3. In the Map of the West Indies, what is the bearing of Port Royal, Jamaica, to St. George's, Grenada ?

4. In the Map of Ireland, what is the bearing of Cork from Dublin ?

5. In Mercator's, what is the bearing from the Land's End to Jamaica ?

PROBLEM VI.

TO FIND THE ANTIPODES OF ANY PLACE BY THE CIRCULAR MAP OF THE WORLD.

Definition. The Antipodes is the part exactly on the opposite side of the globe ; the inhabitants standing on the earth with their heads in opposite directions, and having opposite seasons and hours. It is evident, therefore, that they must be in opposite latitudes and longitudes, or 180 degrees every way from one another.

Rule.—Take the longitude of the given place, from 180 degrees, and the difference considered contrarywise, as east for west, and west for east, will be the longitude of the Antipodes. The latitude will be the same in measure, but north for south, and south for north.

For instance, if the Antipodes were required of *Iceland,* in *north* latitude 65, and west longitude 20, by inspection of the map, it is evident that the Antipodes would be in the opposite sea at 65 *south* latitude, and at 160 *east* longitude, in the opposite latitude ; and 20 taken from 180, gives 160 as the opposite longitude to that of Iceland.

Example 1. Find the Antipodes of Cape Lopatka.

2. Of Solomon's Islands.

3. Of the Gallipagos.

4. Of London.

5. Of Calcutta.

6. Of Owyhee.

7. Of Mecca.

8. Of Tobolsk.

9. Of Jerusalem

10 Of Terra del Fuego.

11. Of Peking.

12. Of Ceylon.

Specify the place at or near the Antipodes, as well as the latitude and longitude.

PROBLEM VII.

TO DETERMINE THE DISTANCE OF TWO PLACES IN MILES.

VARIETY I. *When the two places are in the same Latitude.*

Rule.—Subtract or add for the difference of Longitude, and multiply by the miles to which a degree of Longitude is equal in that Latitude by the Table. Art. 12.

For instance, from Cairo to the Atlantic is 32° E. and 9° W. equal to 41 degrees in the 30th parallel of latitude, which 41 multiplied by 51·96 or an even 52 by the table, gives 2132 geographical miles nearly.

Example 1. On the Map of Asia, what is the distance from Samara to Irkutsk, in Siberia?

2. In the Map of Europe, what is the distance in statute miles from Edinburgh to Moscow?

VARIETY II. *When they are in the same Longitude.*

Subtract or add for the difference of Latitude, and multiply by 69,1 for the statute miles, or by 60 for the geographical.

Example 1. What is the distance between St. Petersburgh and Kiow, in the map of Europe?

2. What is the distance from Ceylon to Barcelona, by the same Map?

3. By the World, what is the distance from Quebec to Cape Horn?

VARIETY III. *When they are on a Map provided with a Scale.*

If the distance exceeds the scale, take the scale in the compasses, and if less than the scale, apply the distance to the scale.

Example 1. How far by the Map of Ireland, is Cork from Dublin?

2. By Palestine, how far is Jerusalem from Mount Tabor?

3. By Scotland, how far is Aberdeen from Glasgow?

4. By England, how far is St. David's from Yarmouth?

5. How far is Portland Island from Berwick?

6. How far is Oxford from Cambridge, Liverpool, and York?

7. By Greece, how far in British miles is Athens, from Corinth, Larissa and Lissus?

8. By Orbis Romanis, how far is Rome from Carthage, Gades, Edessa, and Alexandria?

Variety IV. *When they have different Latitudes or Longitudes by Mercator's Chart.*

Rule.—Measure the distance in the compasses, and set it off on the sides, letting the two places be a middle distance between the two points; then, the number of degrees multiplied by 60 or 69,1, will be the miles.

For instance, to know the distance between Owyhee and Easter Island, in the Pacific Ocean, measure it in the compasses, and transfer the measure from 30 N. and 33 S. and the distance 63° multiplied by 69,1 will be $4353\frac{3}{10}$ statute miles.

Example 1. What is the distance from Jamaica to London?
2. From Lisbon to Halifax, in Nova Scotia?
3. From Calcutta to London?
4. From Paris to Moscow?
5. From Constantinople to Petersburgh?
6. From Pekin to Petersburgh?
7. From Petersburgh to Rome?
8. From the Cape of Good Hope to Bombay?

Variety V. *When they have different Latitudes or Longitudes, by the stereographic projection of the Map of the World, or any other general Map too large for an equal scale.*

Rule.—Take the distance between the places in the compasses, and apply it to a middle meridian, as in the preceding variety.

Thus, if the distance were demanded from Cape Horn to Otaheite, take the distance on the compasses, and at the fourth or middle meridian from each is taken the distance, so as to keep the two places nearly in the middle; that is, from the equator to 72°, which multiplied by 60, gives 4320 geographical miles for the distance nearly.

Example 1. What is the distance from Bombay to Constantinople?
2. What is the distance from Philadelphia to Mexico?
3. What is the distance, on the Map of Asia, from Calcutta to Jerusalem?
4. What is the distance by the Map of Europe, from London to Moscow?
5. What is the distance, by the Map of Africa, from Sierra Leone to Algiers?
6. What is the distance, by the Map of Hindostan, from Madras to Bombay and Calcutta?

VARIETY VI. *When they are in different Hemispheres by the stereographic projection.*

Rule.—Measure the distance to the Antipodes of one of the places, and deduct it from 180 degrees.

For instance, the distance in geographical miles is demanded from the Cape of Good Hope to Buenos Ayres, one in the eastern, the other in the western hemisphere. It is evident the distance cannot be directly measured on account of the separation of the projections; but as every place is 180 degrees from its own Antipodes, if we measure from the Cape to the Antipodes of Buenos Ayres, that distance, taken from 180 degrees, must be the distance from the Cape to Buenos Ayres. Taking opposite latitudes and longitudes to Buenos Ayres, by Problem VI. the Antipodes will fall in 121½° of east longitude; and in 34½ north latitude, north of Nankin, in the Yellow Sea; the measure from which to the Cape, applied to the middle meridian, or 50° to 57°, which taken from 180° leaves 63° for the distance, or in miles 3780.

Example 1. What is the distance from London to Barbadoes?

2. What is the distance from Lisbon to Rio Janeiro?

3. What is the distance from Port Jackson to Norfolk Island?

4. What is the distance from Canton to Phillips's Island?

5. What is the distance from Batavia to Otaheite?

6. What is the distance from Phillips's Island to London?

7. What is the distance from Acapulca to Manilla?

8. What is the distance from Newfoundland to Lisbon?

PROBLEM VIII.

TO DETERMINE THE DAYS ON WHICH THE SUN PASSES VERTICAL IN A GIVEN PLACE, WITHIN THE TROPICS.

Rule.—Ascertain the latitude of the place, then refer to the scale at page xiv. and the days corresponding with the declination or latitude are the days required.

For instance, the sun passes vertical over *Cayenne* in 5° north latitude, on the 8th of March and 10th of September.

Example 1. On what day does the sun pass vertical over Sierra Leone, in Africa?

2. On what day does the sun cast no shadow at Phillips's Island?

3. How many days does the sun cast his shadow southward and northward at Barbadoes?

Obs. The days being ascertained on which he passed vertical, the intervals ndicate the periods required.

4. How many days elapse between the sun passing vertical at Candi and at Madras, in the spring months?

5. On which day does the sun make the longest shadow at Otaheite, and in which direction is it cast?

6. On which days does the sun cast no shadow at Jamaica, and in what direction, and when does he cast the longest meridian shadow in that Island?

Obs. It can scarcely be necessary to tell the ingenious pupil, that the meridian shadow lengthens as the sun declines more and more from being vertical at noon, and that the shadow is opposite to the sun.

7. How many days in the autumnal months is it between the time the sun passes vertical at Mexico and Lima?

PROBLEM IX.

ON A GIVEN DAY TO DETERMINE THE VARIOUS PLACES, OVER WHICH THE SUN PASSES VERTICAL ON THAT DAY.

Rule.—Look for the day and corresponding declination in the scale at page xiv. and the finger passing over the corresponding latitude, from one side of the Map to the other, will point to all the places over which the sun passes vertical on that day.

Thus, if the 24th of July be the day named, then the sun's declination is 20°, corresponding with 20° of north latitude, under which is Owyhee, Mexico, St. Domingo, Tuggant, Mecca, Bombay, and Hainan.

Example 1. At what places does the sun pass vertical, or in the zenith, on the 4th of June?

2. On the 13th of July?

3. On the 13th of December?

4. On the 22nd of September?

5. On the 27th of November?

6. On the 22nd of June?

7. On the 21st of December?

8. On the 4th of March?

PROBLEM X.

TO DETERMINE THE LENGTH OF THE LONGEST AND SHORTEST DAY OF A GIVEN PLACE.

Rule.—Ascertain its latitude by the Map, then its climate by the table, and the corresponding length of the longest day, which substracted from 24, gives the length of the shortest day.

Example 1. What is the length of the longest and shortest days at Madrid ?

2. At the Cape of Good Hope ?

3. At Astrachan, in Russia ?

4. At Botany Bay ?

5. At Cape Horn ?

6. At Washington ?

PROBLEM XI.

TO DETERMINE ALL THE PLACES IN BOTH HEMISPHERES, AT WHICH THE LONGEST DAY IS OF A GIVEN LENGTH.

Rule.—Refer to the table and find the latitude, then pass your finger across the Map in that latitude, north and south, and all the places which the finger passes over in both hemispheres, have the days of the given length.

For instance, it is required to find all the places in which the longest day is 18 hours. By the table of climates, it appears that those countries are in latitude 58½ nearly, and by the map those are Labrador, Hudson's Bay, Kamschatka, Norway, Riga, and Tobolsk, in the northern hemisphere, and the Sandwich Islands only in the southern hemisphere.

Example 1. In what country is the longest day 15 hours ?

2. In what 30 hours ?

3. In what 16 hours ?

4. In what 13 hours ?

5. In what 23 hours ?

6. In what 3 months ?

PROBLEM XII.

TO DETERMINE THE NUMBER OF DAYS IN WHICH THE SUN SHINES CONSTANTLY AT ANY PLACE IN THE TORRID ZONES.

Rule.—As the sun shines 90 degrees from the place where it is vertical, he shines as many degrees beyond, or over the pole, as he is vertical from the equator. The circle of perpetual day in the Frigid Zones is, therefore, measured by the declination of the sun in the table, and we have only to count the number of days, by the scale at page xiv, that he is above any given declination.

For instance, how many days does the sun shine constantly at Bear Islands, latitude 70 or 20° from the pole? *Ans.* It shines as long as the sun has more than 20 degrees of North declination, or, by the table, from the 21st of May to the 24th of July, or 64 days.

Example 1. How many days does the sun shine constantly at Sir Thomas Smith's Sound?

2. At the North Point of Spitzbergen?

3. At Cape North?

4. At Papova in Siberia?

PROBLEM XIII.

TO DETERMINE AT WHAT PLACES, IN EITHER FRIGID ZONES, THE PERIOD OF CONTINUED DAY AND NIGHT, IS COMMENCING ON A GIVEN DAY.

Rule.—By the scale of declination (page xiv) observe the sun's declination on the day, and that number of degrees taken from 90, give the latitudes at which continued day is commencing in one Torrid Zone, and continued night in the other.

Example 1. On the 1st of May where is continued day and night commencing?

2. On the 1st of June?

3. On the 13th of July?

4. On the 1st of September?

PROBLEM XIV.

TO DETERMINE THE DIFFERENCE OF TIME BETWEEN ANY TWO PLACES.

Rule.—As the whole earth of 360 degrees of longitude, turns round to the sun every 24 hours, so 15° is equal to an hour, and 1 degree to 4 minutes of time. Find, then, the difference of the longitude of the places, and convert it into the required difference of time.

For instance, the difference of time is required between Calcutta and Cairo, the former in 90° east longitude, and the latter in 30° east longitude. The difference is 60°, which divided by 15° gives 4 hours of time.

Example 1. What is the difference between Jamaica and Otaheite?

2. Between London and Botany Bay?
3. Between Cape Horn and the Cape of Good Hope?
4. Between Mexico and Mecca?
5. Between Dublin and Jerusalem?
6. Between Canton and Phillips's Island?
7. Between Jamaica and Java?
8. Between Washington and Jerusalem?
9. Between Botany Bay and Quebec?
10. Between Delhi and Buenos Ayres?

N. B. Be careful to *add* for opposite longitudes, and to *subtract* for similar longitudes.

PROBLEM XV.

THE HOUR BEING GIVEN AT ONE PLACE TO DETERMINE AT WHAT PLACE IT IS A GIVEN HOUR.

Rule.—This Problem requires *time* to be converted into degrees of motion, contrary to the preceding, and it must be observed that, as the earth turns from west to east, the east receives the sun before the west; *i. e.* it is always noon to the east before it is noon to the west; or when, for instance, it is noon at London, it is *after*-noon to the east, and *before*-noon to the west.

Example 1. When it is three in the afternoon at London, where is it noon, and where six in the evening?

Answer. Noon at Cape Farewell and Rio Janeiro, and six at Astracan and Madagascar.

2. When it is twelve at night in Jamaica, where is it six in the morning and nine at night?

3. When it is noon at Calcutta, where is it nine in the morning and five in the afternoon?

4. When it is ten at night at Dublin, where is it noon and half past eight in the morning?

5. When it is six in the morning at Paris, where is it ten at night and one in the day?

6. When it is noon at Jerusalem, where is it every hour till midnight?

PROBLEM XVI.

TO DETERMINE WHERE THE SUN IS VERTICAL AT A GIVEN HOUR.

Rule.—Ascertain the longitude where it is noon at the time, and the place where the sun is vertical will be shewn by his declination on the day.

For instance, where is the sun vertical on the 13th of December, at 4 in the evening? 4 × 15 gives 60° of longitude west, because the sun has past our meridian 4 hours. On that day, too, his declination is 23° south by the table. He is, therefore, vertical in 60° west longitude, and 23° south latitude, or near the river Paraquay.

Example 1. Where is the sun vertical on the 4th of March, at six in the morning?

2. On the 13th of July at 11 at night?
3. On the 27th of November at 10 at night?
4. On the 4th of June at 5 in the afternoon?
5. On the 10th of February at 10 in the morning?
6. On the 22nd of October at 9 at night?
7. On Christmas day at noon?
8. On February 27th, when is it 3 o'clock in the morning at Jamaica?

PROBLEM XVII.

TO DETERMINE HOW HIGH THE SUN IS AT NOON ON A GIVEN DAY AT A GIVEN PLACE.

Rule.—As the horizon of a place is always 90° from its own zenith, and as the distance of the equator from that zenith is equal to the latitude of the place, the meridional height of the equator is necessarily fixed at the difference between the latitude and 90°. The height of the sun, therefore, on any day at noon, is the number of degrees of his declination added to, or subtracted from, the height of the equator, according as the sun and place are on the same or different sides of the equator.

For example, it is required to tell the height of the sun at Cairo, at noon, on the 4th of March. By the table, the sun's declination is 6½ degrees south; the sun then, on that day, passes vertical on the meridian of Cairo 6½° from the equator, and it is evident that the sun will be 30+6½ degrees from the zenith of Cairo; which 36½ taken from 90°, the whole distance of the zenith of Cairo to its horizon, gives 53½ for the meridional height of the sun at Cairo, on the 4th of March.

Example 1. London, December 21 and June 21.

2. Jamaica, June 4 and December 13.

3. Botany Bay, May 1 and November 1.

4. St. Petersburgh, November 27 and March 4.

5. Barbadoes, March 22 and June 1.

6. Cape of Good Hope, June 21 and November 27.

PROBLEM XVIII.

TO DETERMINE HOW HIGH THE SUN IS ABOVE THE HORIZON AT A GIVEN PLACE, AT A GIVEN HOUR IN THE DAY TIME.

Rule.—By Problem XVI, determine where the sun is vertical at the given hour; then measure by Problem VII, the number of degrees between the sun's vertical spot and the place, and that distance taken from 90 gives the height above the horizon.

For instance, it is required to tell how high the sun is above the horizon at London, at 10 in the morning, on the 1st of May. By the table on that day, the sun's declination is 15° north, and at 10 o'clock he is vertical over Nigritia, in Africa, in north latitude 15, and east longitude 30°; from which point, taking the distance in the compasses, and applying it on the middle meridian 10, in a medium latitude, the distance appears to be 37° nearly, the distance of the sun from the zenith; consequently, the height of the sun above the horizon, at that time, is 53° at London.

N. B. When the distance to be measured falls in both hemispheres, take the other hour of the day equally distant from 12, because, at both sets of hours, equally distant from 12, the sun is at the same height; or the antipodes of one of the places might be taken.

Example 1. How high is the sun at 4 in the afternoon, on the 13th of July, at London?

2. At 7 in the evening, on the 4th of June, at London?

3. At 9 o'clock in the morning, at London, on Christmas day?

4. At 10 o'clock in the morning, at Calcutta, on the 10th of February?

5. At 7 in the evening, on the 4th of June, at Quebec?

6. At 6 in the morning, on the 1st of March, at Otaheite?

PROBLEM XIX.

THE HEIGHT OF THE SUN AT NOON, ON A GIVEN DAY, BEING KNOWN, TO DETERMINE THE LATITUDE OF THE PLACE.

Rule.—Find the declination and vertical parallel on the given day, and count on any meridian the number of degrees the sun was high at noon, and the place counted to will be the horizon; then count 90° from that place on the meridian, and ascertain the required latitude.

For instance, at Cairo, on the 4th of March, the sun at noon was 53½ degrees high, and on turning to the table I find his declination that day was 6½° south. I counted then 6½ on the meridian round the map, and then other 53½ to the south, and arrive at 60° from the equator, which is the horizon of Cairo, or 90° from Cairo; Cairo is, consequently, 30 degrees above the equator, or in 30 degrees of north latitude.

Example 1. At London, on the 23d of February, the sun was observed at noon to be 28½° high, what is the latitude of London?

2. At the Cape of Good Hope, on the 8th of May, the sun was observed at noon to be 38½ high, what is the latitude of the Cape?

3. At an unknown Island, on a summer's day, on the 22d of November, I observe the sun to be 52° high, what is the name and latitude of the Island?

Obs. As it was a summer's day in November, it is clear that the sun's declination added to its height, and that the horizon of the place is so much nearer the equator, and the latitude so much higher south.

4. What is the latitude of Calcutta, if, on the 4th of June, I observe the sun to be exactly over head at noon?

5. If, at a well-known island. on the 5th of November, I observe the sun pass over head at noon, what is the latitude, and what is the name of the island?

Obs. In these last, it is evident, that the declination. of the day is equal to the latitude.

PROBLEM XX.

TO ASCERTAIN ALL THE COUNTRIES IN THE WORLD WHERE THE SUN IS SHINING, OR IT IS DAY; WHERE IT IS NOON; WHERE IT IS AFTERNOON; AND WHERE IT IS RISING AND SETTING AT A GIVEN HOUR AND DAY.

Obs. This problem is too interesting to be omitted; although, by a smal.

map, all its points cannot be attained with precision. While the sun is in the equator, or very near the equator, the map will be as precise as the globe, because the circle of illumination at that time exactly coincides with the meridians, and a meridian, 90° from the spot where the sun is vertical, will represent the horizon. But when the sun departs from the equator above 8 or 10 degrees, the circle of illumination can only be approximated on a map of the world by a circle described from the vertical point at the mean distance of 90 degrees.

Rule.—When the sun is near the equator, the meridian, 90° from his vertical place, will represent his horizon, at the western of which he will be rising, and at the eastern setting. But when the declination exceeds 10 degrees, describe a circle with the compasses at ninety degrees from the place where the sun is then vertical for a day circle in one hemisphere, and at the antipodes for a night circle in the other hemisphere. It will then be day to all places within the day circle, and night within the night circle. The sun will be rising to all places on the edge of the western day circle and eastern night circle, and be setting at their opposites. It will be noon at the meridian which passes over the vertical point, afternoon between that and the eastern day circle, and morning between that and the western day circle. The hours and heights of the sun at each place, too, may be determined by Problem XVIII.

N. B. To find the extent of the compasses by which to describe a circle of 90° for the sun's horizon, or day and night circles, take 90° from the vertical point on the meridian, and 90° from the vertical point to the equator, where it is cut by 90 degrees distant, and a middle extent between the two will be a near radius of those circles.

For instance, if, on the 22d of November, at four in the afternoon, it be required to shew all the places where the sun then shines, I find he will be vertical over south latitude 20°, and western longitude 60°, in South America; consequently, he shines 90° every way from that spot.

The compasses extended 90° from the vertical point on the meridian, reach Disco Island, at 70 north latitude, to which place he certainly shines; and again to 150 on the equator, to which spot he also shines; then a mean extent between the two, will cause the circle of sun-rise to pass near Cape Farewell, Vancouver's Island, Owyhee, Christian's Island, Penryhn's Island, and Palmerston's Island.

All the countries and seas within the circle will have day; at all under the meridian of 60 it will be noon; and at all to the right afternoon, and left forenoon.

To ascertain the division of the other hemisphere, describe a circle with the same radius at 20 north latitude, 120 east longitude, north of the Philippines, being the Antipodes, the circle will include a space within which is night, and just without it setting is Great Britain, Italy, Sicily, Tripoli, Nigritia, Prince Edward's Island, &c. &c. In the day or afternoon division too, is western Europe and Africa, and all the Southern Ocean.

N. B. The variations between the results as above, and of the Problem, by Bardin's globes, is very trifling and unimportant.

Example 1. Where is it noon, afternoon, forenoon, sun rising, and sun setting, on the 4th of March, at 7 in the morning?

2. On the 13th of July, at 6 in the evening?
3. On Christmas day, at 3 in the afternoon?
4. On the 22d of October, at 12 at night?
5. On the 13th of December, at 9 in the morning?
6. On the 27th of February, at 9 at night?

PROBLEM XXI.

THE DIFFERENCE OF TIME OF A CELESTIAL OBSERVATION BEING KNOWN, TO FIND THE LONGITUDE OF A PLACE.

Rule.—Turn the difference of time into degrees and minutes, counting 15° to an hour.

Example 1. An eclipse of one of Jupiter's moons is entered in the Nautical Almanac, as being to occur at Greenwich at 5 minutes after 2 in the afternoon, on the 10th of September; and the same eclipse is observed by a clock which indicates 23 minutes after 4 in the morning in latitude 19 south, in the Pacific Ocean. Where is the observer?

Example 2. An eclipse of the moon is announced as being to commence at Greenwich, at 43 minutes after 10 in the morning, and its commencement is observed by a ship at sea to take place 17 minutes after 12 at night. What is the longitude of the ship?

Example 3. A gentleman travels from London directly eastward, setting his time-piece before he leaves London, by the sun; but after travelling 24 days, he finds, by a good sun dial, that his watch has lost an hour and 19 minutes; or, that at 12 o'clock, his watch is only 4 minutes after 10. What is his longitude, and what country is he in by the map of Europe.

Example 4. On the 8th of March, 1813, there happens a transit of the moon over the star Aldebaran, at 6 minutes after 6, ending at 19 minutes past 7, at Greenwich. What longitude will those sailors be in, one of whom observes its commencement at 3 minutes after 8, and the other its ending at 7 minutes after 4?

PROBLEM XXII.

THE TIME BEING CALCULATED FOR THE COMMENCEMENT, MIDDLE, AND END OF AN ECLIPSE OF THE MOON AT GREENWICH, TO ASCERTAIN TO WHAT COUNTRIES IN THE WORLD THE COMMENCEMENT ONLY CAN BE SEEN, TO WHAT COUNTRIES THE COMMENCEMENT AND MIDDLE, AND TO WHAT COUNTRIES OF THE WHOLE OF THE PHENOMENA.

Obs. This Problem is only a variety of Problem XXI; the moon, when eclipsed, being necessarily exactly opposite to the sun, and being visible to all the Antipodes of those who see the sun, during the progress of the eclipse.

Rule.—Draw a night and day circle for the time of commencement by Problem XX, and answer the enquiries for that period, then draw other circles for the middle, and others for the end.

For instance, an eclipse of the moon is described in White's Ephemeris, as commencing at Greenwich on the 12th of August, at 41 minutes after 1 in the morning; as having its greatest obscuration at 48 minutes after 2; and as ending at 55 minutes after 3. On that day the sun's declination is 15 north, and at 41 minutes after 1 the sun will be vertical by former Problems, at 160° east longitude, and 15 north latitude near the graduated meridian of the meridian of the map. The moon, of course, will be vertical at the Antipodes, or at 15 south latitude, and 20 west longitude, westward of St. Helena. The moon then will be visible as far as 75 north and south latitude, and at 70 east longitude at the equator; and as in this case, the luminaries fall on the graduated circles, it is evident that a straight line, drawn from 75 to 75, through the centre of each globe, will exactly divide the half which we see the sun, and the half which we see the moon, at the commencement of the eclipse. There are in the right hand hemisphere, all Europe, Africa, and Arabia; and in the left hand hemisphere, all South America, the

West Indies, the United States, and Canada, as far as Easter Island and Santa Fé.

From the commencement to the middle, the earth by its rotation will cause the sun to appear to move right over Tinian, and the moon very nearly over St. Jorge, and the moon will retire from the sight, or set in the east, as it comes more in view, or rises to the west. This space will be measured by the 1 hour 7 minutes which elapses between the beginning and middle, or 16° 45′; and a similar time and space occur between the middle and the end.

If, then, straight lines, or moderately curved lines be drawn with a pencil from 75 to 53 nearly, passing over Socotra, and from 54 nearly to 75 south, passing mid-way between St. Paul's and Kerguelan's Islands; those lines will indicate the space to which the sun has risen, and the moon set between the middle and commencement. So other lines drawn to 36, across the Baltic, Black, and Red Seas, and Madagascar, indicate the countries which set between the middle and end of the eclipse.

In like manner, if similar lines be drawn from 75 north to 75 south, through 127 nearly, and 144 nearly, they will indicate Phillips's Island, King George's Island, &c. to which the moon rises eclipsed.

Hence it is evident, that to all Asia, New South Wales, the clusters of South Sea Islands, &c. this eclipse will not be visible.

N. B. Before the pupil proceeds to the other examples of this beautiful Problem, I advise him to go a second or third time over the above.

Example 1. Where is visible the beginning, middle, and end of the eclipse of the 15th of February, 1813, beginning 10 minutes after 7 in the morning, having its greatest obscuration at 36 minutes after 8, and ending at 2 minutes after 10, at Greenwich?

2. Where was that eclipse visible, which happened on the 27th of February, 1812, and began at 54 minutes after 3 in the morning, was total at 52 minutes after 5, and ended at 50 minutes after 7, at Greenwich?

3. Where was that eclipse visible, which happened on the 22d of August, 1812, beginning at 10 minutes after 1 in the afternoon, having its middle at 3 o'clock, and its end 50 minutes after 4, at the Royal Observatory at Greenwich?

PROBLEM XXIII.

WHICH IS THE HIGHEST LAND IN A MAP OR COUNTRY

Rule.—Observe where a river rises, and there the land is higher than all the land through which it runs to the sea.

Example 1. Where are the highest lands in South America?

2. Where are the highest lands in England?

3. Where are the highest lands in Africa?

4. Where are the highest lands in Scotland?

5. Where are the highest lands in Europe?

6. Where are the highest lands in North America?

7. Where are the highest lands in Asia?

8. Is London situated on higher land than Oxford?

9. Which stands on the highest land, Shrewsbury, Worcester, or Gloucester?

10. Which stands on the highest land, Delhi or Lahore, in Hindostan?

PROBLEM XXIV.

IS THE FALL OF THE HIGH LAND IN A COUNTRY RAPID OR GRADUAL, OR HAS IT SUCCESSIVE HILLS BETWEEN THE SOURCES OF RIVERS AND THE SEA?

Rule.—If the river runs straight, the fall is rapid and uninterrupted; if its course is broken by lakes, the country is flat; or if it winds much, the hills and high grounds which turn it are numerous.

Example 1. What is the character of the country through which the Ganges flows?

2. What is the character of the country through which the Shannon runs?

3. What is the character of the country through which the Yangtze Kiang runs in China?

4. What is the character of the country through which the Tagus runs in Spain?

5. What are the various characters of the countries through which the great river Amazons runs?

6. What are the various characters of the countries through which the Paraguay runs in South America?

7. What are the various characters of the countries through which the Nile runs in Africa?

8. What are the characters of the country through which the Jordan runs in Palestine?

9. Trace the various characters of the counties through which the Trent, the Thames, and the Severn, run in England.

MISCELLANEOUS EXAMPLES FOR THE EXERCISE OF THE STUDENT IN ALL THE PROBLEMS.

1. In what latitude begins the southern temperate zone, and ends the northern frigid zone?

2. Is the sun ever vertical over London, and when—or over Madras, and when?

3. In what latitudes and at what places is the longest day 19 hours, 16 hours, and 18 hours long?

4. It is full moon on the 14th of May, at 10 at night; where is the moon then vertical, where visible, and how high at London?

5. What places are 500 geographical miles from London and from Paris?

6. How is the sun at Canton in China, when it is rising at London on the 20th of September?

7. How many statute miles is it round the world, east and west, in the 80th degree of north latitude, at the latitude of London, and at Jamaica?

8. Where is the sun setting on the 20th of March at noon at Quebec?

9. If a man travel 100 miles eastward in Greenland, in France, in Barbary, and in Guinea, what will be the difference of his watch, set at the place he left, from the time at that place at which he arrives on the 12th of May, and 6th of October?

10. Which way do the inhabitants of Quito, Otaheite, Jamaica, and Candi, cast their shadows?

11. How many miles is London, Calcutta, and the Cape of Good Hope, from the Equator and the North Pole?

12. Where does the sun pass vertical on the 27th of April; and on what day does he pass vertical at Batavia and Barbadoes?

13. Where does the sun shine, and where is it night, on the 25th of December, at three in the afternoon, at Washington—to what places is he rising, and to what places setting—and where is it afternoon, and where forenoon, and how high is he at Jamaica, at Phillips's Island, and at Japan?

THE

PRACTICAL CONSTRUCTION OF MAPS.

PROBLEM XXV.

TO CONSTRUCT A MAP OF THE WORLD, ON THE PLANE OF A MERIDIAN, ACCORDING TO THE GLOBULAR PROJECTION OF THE SPHERE.—*(See fig.* 1 *and* 2, *plate i.)*

Defin. 1. The globular projection of the sphere is that in which equal spaces on the surface of the globe are represented by equal spaces of the projected map, as nearly as a spherical surface can be represented on a plane.—(Art. 16, p. xi.)

2. The plane of a meridian is the plane of one of the great circles of the sphere passing through both poles, and crossing the equator at right angles.—(See Art. 14, p. xi.)

3. A hemispherical map of the world is a representation of the entire surface of the globe of the Earth, projected on the plane of one of its great circles.—(Obs. 1, Art. 16, p. xii.)

I. To draw the meridians, or circles of longitude, Fig. 1, pl. i. (Art. 14, p. xi.)

Obs.—Longitude has been defined, page ix.

1. Draw AB and NS at right angles to each other.*

2. From C as a centre, with any radius, CA or CB, according to the size of your paper, describe the circle ANBS.

3. This circle is then the plane of your projection. (Defin. 2.)

4. Divide the four radii, CA, CN, CB, CS, each into nine equal parts.

5. Now, to draw the meridian 80° west of Greenwich, we have the two poles 90° 90°, and the point 80° in the equator, or diameter AB.

6. From N as a centre, and with NC as a radius, describe the arc ZCZ; also from S, with the same radius, describe the arc XCX.

7. Then remove the compasses to the point 80 on the equator, and describe the arcs 1,1 and 2,2.

8. Through the intersections, as at 1 and 2, draw lines from 2,2, through the points 1,1, till they intersect the diameter BA produced in D.

9. Then will D be the centre from which with the radius D 80 or DN or

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* A B represents the equator, and N S the *axis* meridian.

DS. the meridian of 80° west longitude from Greenwich must be described.—(See art. 11, 12, pp. ix, x.)

Note.—The same radius will draw the meridian expressing 140° W. L.; and, in the other hemisphere, the corresponding meridians of east longitude.

10. The meridian of 50° is drawn in the same manner as that of 80°, except that the point 50 on the equator (AB) is the centre from which, with the radius CB, the intersections are made at *a,a,* and *b,b,* on the arcs described from N and S. The point E, where the lines *ba, ba,* meet on the equator, is the centre for the meridian of 50° W. long. The same radius serves for the other three meridians 30° within the circle of projection.

Note.—In this manner are all the other meridians for both hemispheres to be drawn; as may be seen in figure 7th, plate ii.

II. To draw the parallels of latitude.—Fig. 2, pl. i.

Obs. Latitude has been defined, page viii.

1. The same construction remaining, and the radii CN, CS, divided each into nine equal parts.

2. Divide the circumference ANBS into 36 equal parts; so shall each quadrant AN, BN; AS, BS, be divided into nine equal parts, which, being again subdivided into ten equal parts each, will give us 360 equal parts or degrees. (Art. 12, p. x.)

3. To draw, now, the parallel of 30° *north* latitude, set one foot of the compasses in the point 30 on the *axis* meridian NS, and with any radius describe the circle KTL.

4. Set, again, one foot of the compasses in the points 30, 30, in the circumference, and intersect the circle KTL in the points *s,s n,n.*

5. Through *n n* and *s s* draw the straight lines *n n, s s,* meeting each other in the point R of the axis SN, produced to R.

6. With R as a centre, and R 30 as a radius, describe now the parallel of 30° north latitude.

Note.—The same radius is, of course, used for 30 south latitude.

7. After the same process the parallel of 60° north latitude is drawn, as may be easily conceived by inspecting the figure.

Note.—And in this way proceed with all the other parallels in both hemispheres; as is evident from figure 7th, plate ii.

8. This is the rationale of construction. That which respects the minutiæ of *filling up the map* is very amply laid down in page xii, art. 18, 19, and 20; and the general directions, under the titles of "Latitude," "Longitude," "Points of the Compass," and "Scales of Distances," pp. viii. ix. xi. and xii., must be strictly attended to, so far as they respectively bear on your practice of map-making.

PROBLEM XXVI.

TO PROJECT A MAP OF THE WORLD ON THE PLANE OF A MERIDIAN, ACCORDING TO THE STEREOGRAPHIC PROJECTION OF THE SPHERE.—*(Fig. 3, plate i.)*

I. To draw the circles of latitude.

1. Describe from any centre C, the circle ENQS, which will represent one half of the earth's surface.

2. Draw the diameters EQ and NS, intersecting each other at right angles.

3. EQ will be the equator, and NS the axis meridian.

4. Divide the circumference into 360 equal parts; numbered 10, 20, 30, &c. as on the figure.

5. From E to 140 draw the line E 140; bisect the portion *a* 140 in *v*, and from *v* raise the perpendicular *vx*, which produce till it meet NS produced in *x*. The point *x* will now be the centre from which to describe the parallel *z a* 140; or, which is the same thing, the 50th degree of *south* latitude.

Note.—The same radius will serve for the 50th parallel of *north* latitude; and after the same manner all the other parallels in both hemispheres are drawn, as they are fully shewn in figure 8th, plate ii.

II. To draw the circles of longitude.

1. The unequal divisions of the equator, as indicated by the numbers 10, 20, 30, &c. on the radius CQ, are obtained by the same process which is given in the *Observation* under Problem XXXII, page xlv, and which are obvious from No. 1, figure 11, plate iii.

2. The points 20, 40, 60, 80, will now be centres on which the circles of longitude S*y*N are to be drawn; but, for the remaining circles, produce the diameter EQ, and from N, through every tenth degree in the quadrant NQ, draw lines cutting that diameter produced, and the points of intersection will give the centres for the remaining circles of longitude: it is necessary, however, to observe to the young geographer, that each centre is twenty degrees distant from the preceding one.

3. For the circles of longitude in the other semi-hemisphere, the centres may be formed by setting off the proper distances on the diameter EQ, produced the contrary way.

PROBLEM XXVII.

TO DRAW A MAP OF THE EARTH ON THE PLANE OF A MERIDIAN, ACCORDING TO THE GLOBULAR PROJECTION OF THE SPHERE.

Note.—Though Problem I, exhibited this projection, we are induced to give it by another process; since, by this variety, more skill will be acquired in the practice of mathematical geography.

I. To draw the circles of latitude. Fig. 4, plate 1.

1. Describe the circle ENQS; draw the diameters EQ and NS at right angles; the former will represent the equator, and the latter the axis meridian.

2. Divide the quadrant QS into nine equal parts, 10, 20, 30, &c. From each of these divisions draw lines, as E*f* 20, E*g* 30, E*d* 60, &c.

3. Divide into two equal parts the portions *f* 20, *g* 30, *d* 60, &c. and from *c*, the point of division, let fall the perpendiculars *c*F, *c*G, and *c*D, produced till they cut the polar diameter extended indefinitely.

4. The points F, G, D, will be centres, from which the circles of latitude *zf* 20, *zg* 30, *zd* 60, are to be described, and which will be the true representation of the parallels 20, 30, and 60 degrees of *south* latitude.

5. In the same manner, draw the parallels for every tenth or fifth degree in that semi-hemisphere.

6. To obtain those in the northern hemisphere, set off on the line SN produced, in the opposite direction, the distances which served as centres of the southern parallels: and thus the northern ones may be described for every tenth or fifth degree of latitude.

II. To draw the circles of longitude. Fig. 4, p. 1.

1. Divide the quadrant EN into equal parts, 10, 20, 30, &c. Divide also the quadrant SQ into two equal parts at *s*, of 45° each, and let fall the perpendicular *ss* from the point *s*.

Note.—This line *ss* (the sine of 45°) is further explained in the *Observation* under Problem XXXI. page xliv.

2. Set off, on the line NS produced, SR equal to *ss*, (see fig. 10, plate iii;) then, lines drawn from R to 10, 20, 30, &c. in the quadrant WS, will divide the radius in the points 10, 20, 30, &c. through which the circles of longitude are to be drawn (in fig. 4, plate 1,) after the following manner:—

3. To find the centre of the circle S 30 N, join the points S 30, and N 30; divide the two lines into two equal parts in *o*, and let fall the perpendiculars *o* 30; and the point *r*, where they meet, is the centre of a circle of 30 degrees of longitude. The other centres may be found exactly in the same manner.

Or the centres may be found, mechanically, and very readily, from the following Trigonometrical Table of Radii:

1. Let the radius of the circle be divided into 100 equal parts by a scale; then the meridian or circle of

10°	will be equal to	12
20°		25
30°		42
40°		61·5
50°		88
60°		133
70°		208
80°		464

of those parts set off from C towards Q, added to the distance between C, and the several points 10, 20, 30, &c. in the radius, EC.

2. Thus the radius of the circle of 10° of longitude is equal to the distance between 10 in the line EC, and 10 in the line QC; the radius of that of 50°=the distance between 50 and 50; that of 80° between 80 in the line EC and a given point in EQ produced; which, taken from C, will be = 342 parts, of which radius is = 100.

PROBLEM XXVIII.

TO PROJECT A MAP OF THE EARTH STEREOGRAPHICALLY ACCORDING TO THE HORIZONTAL PROJECTION OF THE SPHERE, AND ANSWERING TO THE LATITUDE OF LONDON. *(See Fig. 5, plate i.)*

I. To draw the meridians.

1. With any radius, SC or SD, describe the circle CPD, which divide as usual into 360°, and draw CD, PS, at right angles to each other; then will PS be the first meridian, or the north and south *azimuth.*

Note.—Azimuth, or *vertical circles,* are great circles of the sphere, intersecting each other in the zenith and nadir, and cutting the horizon at right angles.

2. On the quadrant DP set of DE=$51\frac{1}{2}$°=the latitude of London, and draw parallel to CD, WE, the east and west *azimuth* of the place. Bisect WE in the point Z, which will be *London,* or the *place of projection.* The letters E, S, W, N, represent the four cardinal points, bearing due east and west, north and south, from London (Z), as the centre of the projection. And P, the pole of the meridional projection, is also the pole of the horizontal projection.

3. Describe now the meridians of the meridional projection CPD, observing to allow them to pass through the pole P, beyond the primitive circle, and to touch the horizontal projection in the segment W N E.

4. *To describe the parallels of latitude,* lay a ruler upon W, and move it to every degree, or every tenth degree of the meridian PD continued, marking where it cuts the meridian NS, as through these points the parallels on this side of the pole must all pass. But, as they have not a common centre, the points through which they have to pass on the other side of the pole are found by moving the ruler along every tenth degree of the meridian PC continued;

for, wherever the ruler intersects the meridian NS, will be the opposite points through which the parallels are to pass.

5. Having now got the diameters of the parallels, we have only to bisect each of them, and with one half, as a radius, describe the correspondent parallel. In fine, the projection may now be completed, as shewn in the annexed Figure, No. 2.

PROBLEM XXIX.

BY THE GLOBULAR PROJECTION OF THE SPHERE, TO CONSTRUCT A MAP WITH AZIMUTH LINES TO SHEW THE BEARING AND DISTANCE OF ALL PLACES WITHIN THE MAP FROM LONDON, OR ANY OTHER GIVEN PLACE, IN THE CENTRE. *(See Fig. 6, plate i.)*

Obs. It will at once be perceived that, in this partial projection, the longitude and latitude of places are neglected, because the map is restricted to the bearing and distance only of places from a station in the centre.

1. Having described a circle of any convenient radius, we cross it with two diameters; of which NS represents the meridian of the place assumed as the centre, or the north and south line; and WE, the east and west line, may be considered the parallel of latitude passing over the place. The intersection of the diameters, as at Z, indicates the place in the centre.

2. Divide each quadrant into 90°, as shewn in the exterior circle of the Figure; and the whole inner circle into 32 equal parts, to indicate the points of the mariner's compass. (See the Table of Angles, &c. page liii.) The lines radiating from Z are the bearing lines. The three concentric circles, described from the common centre Z, may be assumed as one degree each; and the scale will then contain 180 geographical, or 208¼ English, miles.

3. Suppose, now, we place *London* in the centre; then, by the help of the Tables of Latitude and Longitude in the sequel of this Atlas, we may transfer, in this projection, all places within 180 miles of London.

Note—1. The numbers 1, 2, 3 degrees, on the scale from the centre, are arbitrary, and may be reckoned 10, 20, 30 degrees; in which case our projection would embrace 1800 geographical, or 2085 English, miles. Or, if the radius, or scale, be divided into 4, 5, 6, or any given number of equal parts, each of those parts may represent 4, 5, 6, or 40, 50, 60, degrees.

2. The scale in this projection must be considered a moveable slip of Bristol board, graduated according to the radius of the projection, and rivetted on the map by means of a neat button. Its use is obvious; for, by moving it round, we determine the bearing and distance, at once, of all places from London, or any other place (Z), in the centre.

SCHOLIA.

1. Fig. 7th, plate ii. represents the entire globular projection, executed by the process of Problem XXV. or that of Problem XXVII.

2. Fig. 8th, plate ii. represents the complete stereographic projection of the sphere, executed according to the method of Problem XXVI.

3. If, in No. 1, fig. 7th, we take from the whole projection the rectangular figure ABCD, we shall have the skeleton of the Map of Asia, which is the fourth in this Atlas.

4. And if, in No. 2, fig. 7th, we take from the hemisphere the parallelogram EFGH, it will be the skeleton of the Map of Africa, which is the fifth of the Atlas.

5. Also, if, in No. 1, fig. 8th, we take the rectangular figure IKLM, it will be the skeleton of the Map of North America, and which is the sixth in the Atlas.

6. Finally, if, in No. 2, fig. 8th, we take the parallelogram NOPQ, it will be the skeleton of the Map of South America, which in this Atlas is the seventh.

Note.—Projected on a large scale, these skeletons will afford the most ample exercises for the display of juvenile genius and taste in the subsequent execution of *filling up*, shading, lettering, and colouring.

PROBLEM XXX.

TO CONSTRUCT A MAP OF THE WORLD, ON THE PLANE OF A MERIDIAN, ACCORDING TO THE ORTHOGRAPHIC PROJECTION OF THE SPHERE

(See Figure 9, plate ii.)

Obs. The principle on which this projection depends is accounted for in the *Observation* to be found under Problem XXXIII, page xlv.

I. *To describe the meridians, which, in this projection, are ellipses.*—Provided they be described through every tenth degree on the equator, the distance of each successive meridian, from the centre of the map, is found by means of the parallels drawn through the corresponding divisions of the circumference, as shewn in No. 1, fig. 12. If these elliptical meridians are drawn, with a pair of elliptical compasses, through every fifteenth degree of the equator, from the centre of the map, they will appear as in Fig. 9, plate ii.

II. *To draw the parallels of latitude, which are straight lines.*—If they are at 10° separate from each other, lines drawn parallel to the equator, through every successive 10th degree of the circumference, will indicate the parallels of latitude. But, if they be drawn through every fifteenth degree of latitude, they will appear as in Figure 9, plate ii.

Note.—This projection is chiefly useful for astronomical purposes, and then only when you would represent a sign of the Zodiac. But it is obvious, that twelve such projections would furnish the means of depicting the twelve signs; and this is no inconsiderable advantage to those who study "Squire's Grammar of Astronomy."

PROBLEM XXXI.

TO PROJECT, ON THE PLANE OF AN EQUATOR, A MAP OF THE WORLD, ACCORDING TO THE GLOBULAR PROJECTION OF THE SPHERE. *(Fig. 10, plate iii.)*

Obs. In figure 10, No. 1, the point R is distant from N equal to the line *ss*, or the sine of 45° in figure 4, plate 1. This point R is the place of the eye, whence the spectator, supposing the sphere pellucid, views the entire hemisphere WSE. (No. 1, fig. 10, plate iii.) The lines which pass from 10, 20, 30, &c. in WS to the eye at R, cross WP obliquely in the points 10, 20, 30, &c. Thus, the equal division, or nearly so, of the radius WP, is obtained; and this is, in fact, the principle of the globular projection of the sphere. (See Problem XXVII.)

I. To draw the meridians; which, in this map, are straight lines, radiating from P, the pole.

Divide the circumference into 36 or 360 equal parts, and to each of these equal divisions draw straight lines, as seen in No. 2; and the meridians for one hemisphere, projected on the plane of the equator, are now laid down.

II. To draw the parallels of latitude; which, in this map, are concentric circles, described, with their respective radii, from P the common centre.

From the *Observation* with which we have prefaced this construction, we know that WP, the radius (No. 1), is divided into nine equal parts. Then, with the respective radii, P 10, P 20, P 30, &c. of No. 1, describe the concentric circles, as shewn in No. 2, and one hemisphere is completed, so far as respects the projection of the meridians and parallels.

Note.—Countries, sea-coasts, towns, or places, mountains, rivers, &c. are now to be laid down from the Tables of latitude and longitude, as found in the sequel of this Atlas; and the directions given in page xxxviii, art. 8, are to be rigidly adhered to in the work before us.

PROBLEM XXXII.

TO CONSTRUCT A MAP OF THE WORLD, ON THE PLANE OF THE EQUATOR, ACCORDING TO THE STEREOGRAPHIC PROJECTION OF THE SPHERE. *(See Fig.* 11, *plate iii.)*

Obs. As, in this projection, the eye of the observer is placed on the surface of the sphere, and at either pole, as at N, (No. 1,) the straight lines drawn from the equal divisions of the quadrant WS to the point N, cut the radius WP into unequal divisions, we derive, at once, the principle of the stereographic projection of the sphere, in which equal spaces on the surface of the earth are represented by unequal spaces on the projection; the space W 10 being double of P 80; and, consequently, if P 80 be 1, W 10 will be 2; and any quadrilateral continued between W 10 and 10° of latitude, or a projection on the plane of the meridian, will be four times the size of a quadrilateral comprehended by P 80 and 10° of latitude, because the square of 2 is 4, and the square of 1 is 1.

1. To project the meridians; which, in this, as in the last Problem, are straight lines.

The directions given in that Problem apply perfectly to this. The process is the same in both, and needs no further illustration.

II. To draw the parallels of latitude, which, as in the former projection, are concentric circles.

Take P as the common centre, and with the radii P 10, P 20, P 30, &c. of No. 1, respectively, describe the concentric circles, which shall represent the parallels as shewn in No. 2.

Note.—The note subjoined to the last Problem is to be fully observed in the execution of this projection.

PROBLEM XXXIII.

TO PROJECT A MAP, ON THE PLANE OF THE EQUATOR, ACCORDING TO THE ORTHOGRAPHIC PROJECTION OF THE SPHERE. *(See Fig.* 12, *plate iii.)*

Obs. 1. As the eye of the observer is supposed, in this projection, to be situated at an *infinite* distance from the surface of the sphere, all the lines which are drawn on it are straight lines. On this principle, the *meridians* would appear, to an eye so situated, as in No. 1, fig. 12, plate iii; and the *parallels* would also be straight lines, as represented in fig. 9, plate ii.

2. But, on the plane of a meridian, a map constructed according to this

projection has its meridians drawn elliptical, while its parallels are straight lines. (See fig. 9, plate ii.)

3. Whereas, on the plane of the equator, the same laws are observed as in the two last projections, and the meridians are radiating straight lines; while the parallels are concentric circles, described from the common pole (No. 2, fig. 12.)

I. To draw the meridians.

Proceed as in the two last Problems for their meridians.

II. To draw the parallels of latitude.

Through the points 80, 70, 60, 50, 40, 30, 20, and 10, of the semicircle NWS (fig. 12, No. 1), draw straight lines parallel to NPS; and the divisions 80, 70, &c. on PW, are the divisions which indicate the law of the projection, and the radii for the concentric parallels, which are respectively drawn on No. 2.

SCHOLIUM.

On reviewing these projections, the globular (fig. 10) has decidedly the advantage of presenting equal spaces of latitude throughout its successive geographic quadrilaterals; the stereographic (fig. 11) presents unequal spaces, diminishing towards the pole, but allowing us more space than the globular for those countries situated near the equator; and, in this respect, answering better than the other the conditions of the projection. The othographic is the reverse of this last, as it allows to the polar regions more space than either of the other two; but then the countries contiguous to the equator are abandoned to a greater error in respect of latitude than even the polar regions in the stereographic projection. For geographical purposes, the globular is preferable; for astronomical uses, the stereographic merits attention, when the signs of the Zodiac, or stars within the tropics, are to be laid down, as seen from either pole; and the orthographic suits best the delineation of the arctic or antarctic constellations.

PROBLEM XXXIV.

TO PROJECT A MAP OF ASIA ACCORDING TO THE GLOBULAR PROJECTION. *(See Fig. 13, plate iv.)*

1. Having drawn any indefinite line AX, and assumed a distance A*k* for 10° of latitude, set off this distance nine times from A toward X. The point 9, or 90, will be the pole.

2. With the distance A*k* set off AB=AD, because the degrees of longitude on the equator correspond with those of latitude on a meridian of the sphere.

3. At the point *a*, or 70° of latitude, set off *ab*, and *ad*, each equal to

20·52; the number of geographical miles corresponding to 70°, as given in the Table, page x. of the Atlas.

4. Through the points B *b*, D *d*, draw the oblique lines B *b*, D *d*, which, by the laws of decreasing longitude, on which the Table, page x, is constructed, terminate in the point X. This point (X) is, therefore, the common centre for all the parallels of latitude; and it is 30 degrees beyond the pole P, or at the same distance north of the parallel of 60 degrees, that the equator is south of it.

5 On the equator, EAQ, set off the portion AB, or AD, as often as may be necessary to answer the conditions of the projection; and from each of these points, 50, 60, 70, &c. draw lines to the point X, and they will indicate the meridians, which are all straight lines.

6. Set, now, one foot of the compasses in the point X, and with the other describe the successive concentrics, 10, 20, 30, &c. for the parallels of latitude.

7. Through the point A draw ML, at right angles to AX; raise the two perpendiculars MO, LW, and draw OW, completing the parallelogram OMLW.

8. The degrees of longitude, as on the equator EAQ, or of latitude, as on the meridian 140°, may now be inserted; or upon the parallel lines OM, WL, and OW, ML.

Note.—The outline of the Asiatic continent, as in the figure on the plate, will materially assist the student; but his great reliance must be in the Table of Latitude and Longitude. The eye is never to be depended on where the process of operation proceeds on such data as the Table affords.

PROBLEM XXXV.

TO PROJECT A MAP OF A PARTICULAR PORTION OF THE EARTH'S SURFACE, AS OF ITALY, CONTAINING 6° OF LATITUDE (VIZ. FROM THE 39TH TO THE 45TH DEGREE), AND 9° OF LONGITUDE (VIZ. FROM THE 7TH TO THE 16TH OF EAST LONGITUDE).—*(Fig. 14, plate iv.)*

1. Draw the line EF, and in the middle of this line raise the perpendicular DC, which divide into six equal parts, or degrees of latitude, and through C draw the line IK parallel to EF.

Obs. The projection will, of course, be regulated, as to size, by the size of the paper.

2. Divide a degree into 10 equal parts, or, if large enough, into 60; and in the Table, page x, find the number of miles which a degree of longitude contains in the latitude of 39°, viz.—46·62, and, from any scale of equal parts, set off one half of the same, viz.—23·31, on each side of D.

3. Find, again, in the Table page x, the number of miles contained in a degree of longitude, in the latitude of 45°, viz.—42.43; and from the same scale of equal parts, from which the former measure was taken, set off 21.215 on each side of C. Draw straight lines from I to E, and from R to F; divide them into the same number of parts as the line CD contains, and through the points draw parallel lines. Thus IKFE is a projection for one degree of longitude, including six degrees of latitude.

Since the degrees must be so drawn, that the two diagonal lines in each must be equal to each other, they are to be projected in the following manner:—

First,—Take the distance from E to K, or from F to I, and, setting one foot of the compasses first in E, and then in F, describe the arcs L and M. Then set one foot, first in I, and afterwards in K; and, with the same extent, draw the arcs N and O.

Secondly,—Take the distance between E and F, and set it off on the arcs described from E to N, and from F to O; then take the distance between I and K, and set it off from I to L, and from K to M.

Thirdly,—Draw the lines between L and N, and M and O; divide them into degrees, and draw parallels from those points to the corresponding ones in the meridians IE and KF. The same method must be pursued in drawing all the other meridians and parallels, which the conditions of the map require.

Note.—If the map be very large, so much so that the compasses will not extend to the furthest degree, or from F to I, then draw one or more diagonals at once, and afterwards proceed with the rest. Thus, when the parallelogram PGEN and KGOF are described, LIGP and KMGH may be done.

4. Number the degrees of latitude up both sides of the map, and the degrees of longitude on the top and bottom. Then make the proper divisions and subdivisions of the country; and, from the Table of Latitudes and Longitudes, it will be easy to set down in the map the principal places which should be found in it; for any town must be placed in the intersection of the lines which would indicate its latitude and longitude.

5. Thus *Florence* must be placed at A, where the circles of 43° 46′ 30″ N. lat. and of 11° 3′ 30″ E. long. cut each other. And *Naples* must be placed at B, on the sea-shore, at 40° 45′ 15″ N. lat., and 14° 17′ 30″ E. long.

6. In like manner, the mouth of a river, as the Tiber, for instance, must be set down; but to describe its whole course, every turning must be laid down according to its latitude and longitude, and the towns and bridges also by which it passes.

Obs. 1. In the projection now described, the diagonals being all equal, the number of meridians causes no defect in the representation, because equal spaces on the globe are represented by equal spaces on the map; consequently, places lying in the most remote degrees of longitude are as truly represented as those towards the middle of the projection, and their distances will agree with a common measure; so that a pair of compasses, extended between any two places, and applied to the scale (art. 17th, page xi), will give the distance without further trouble.

2. When the extent of a country is not great of which a map is to be made, as a province or county, for example, the meridians, as to *sense,* are parallel to each other, and may be represented by straight lines. The whole, indeed, will differ so little from a plane, that it will be sufficient to measure the distances of places in miles, and to lay them down in a plane right-lined map, of which the successive spaces, formed by the meridians and parallels, would be right-angled parallelograms, or, more properly, squares.

PROBLEM XXXVI.

TO PROJECT A MAP OF EUROPE. *(See the third Map of the Atlas.)*

1. Having drawn a line for the central meridian of the map, numbered in the plate 20, 20, assume any convenient distance for 5° degrees, and set it off on this meridian seven times from 35° to 70°; or, to obtain at once the common centre for all the parallels of latitude, set it off 11 times from 35, because 90−35=55, and 55÷5=11= the number of spaces of 5° between 35 and 90.

2. The eleventh, or extreme division, is the pole; and 6½ degrees more beyond it, will be the common centre from which the successive and concentric parallels of latitude are to be drawn.

3. To draw the meridians, take from the Table of decreasing Latitude, page x, the number of miles in 35° latitude, and set this off as often as is necessary on each side of the central meridian (20°), on the parallel, or circle of latitude 35°.

4. From these points of division draw right lines to the common centre, and they will represent the meridians. But, because the meridians in this map are portions of circles, they are curved after the following manner:—Take from the Table, page x, the number of miles in 40°, and set this off on the parallel of 40°; take from the Table the number of miles in 45°, and set this off on the parallel of 45°; take for 50°, 60°, 65°, 70°, in like manner; and having set off these measures on the concentric parallels as often as necessary, the points, when joined to indicate the meridians, will form as many segments of circles as there are meridians: and hence the construction is obvious.

Note.—For the purpose of drawing maps geometrically correct, it is necessary that schools, or preceptors, or students for themselves, provide a *bow-rule*, and also *beam-compasses.* The former is purchased at any mathematical instrument maker's for half-a-guinea; and the latter seldom exceeds twenty-five or thirty shillings. In drawing large maps, it will be found most convenient to fasten down the edges of the paper on an even floor, which is covered with a smooth oil-cloth.

PROBLEM XXXVII.

TO CONSTRUCT A MAP WHICH SHALL CONTAIN THE DEGREES OF LONGITUDE AND LATITUDE OF GREAT BRITAIN.

1. This island lies between 50° and 60° N. latitude, and between 10° east and 6° west longitude. Having, therefore, chosen any unit of measure for a degree of latitude, the degrees of longitude must be proportioned to it.

2. By the Table, page x, it appears that, in latitude 50°, the length of a degree of longitude is to one of latitude as 38·57 is to 60; that is to say, a degree of longitude is something more than half the length of a degree of latitude.

3. The exact proportion may, however, be had by a diagonal line, which is divided thus:—Draw an indefinite line, of perhaps three inches; at each extremity raise two perpendiculars, which make equal to the assumed degree of latitude; complete the parallelogram by drawing its fourth side parallel to the first or base line: reduce the figure to two right-angled triangles by a diagonal. Divide this diagonal into 60 equal parts, and through the points of division draw lines parallel to the sides of the parallelogram, which are of equal length with the degree of latitude.

4. Consult now the Table, page x, for the length of a degree of longitude in latitude 60°, which is found to be 30·00 in the Table. Of course, on the diagonal scale, we take off this quantity where the number 30 is found. Then, on each side of the perpendicular, on which we set off the degrees of latitude, this measure 30 is set off three times to the east, and seven times to the west, to answer the conditions of the map.

5. For the corresponding measures, at 50° of latitude, take off at 38·57 on the diagonal scale, the proper quantity, and set it off thrice to the east, and seven times to the west, of the perpendicular, or first meridian.

6. Through the corresponding points, at 50° and 60° of latitude, draw now the meridians; and, through the equal divisions on the first meridian, draw the parallels of latitude.

7. Then, from 3° east and from 7° west longitude, raise perpendiculars, which will complete the parallelogram that must contain the map.

8. Having next divided into *minutes* and *seconds* the degrees of longitude and latitude, towns, cities, or rivers, or mountains, may be accurately laid down; since, by intersectional lines through the corresponding points of latitude and longitude, whatever is to be represented on the map may be easily depicted.

Note.—A mariner's compass, on any such map, will shew the bearing of one place from another

PROBLEM XXXVIII.

TO CONSTRUCT MERCATOR'S CHART OF THE WORLD. *(See the second Plate of the Atlas.)*

1. Draw any indefinite line for an equator, marked *o* EQUATOR *o* in the plate.

2. Assume any point on this line for the position of the *first* meridian; that is to say, the meridian of Greenwich.

3. Take any assumed distance in the compasses for 10° of longitude, or the unite of measure; set this off on the equator from *zero* (o), or the meridian of Greenwich, eighteen times on both sides of *zero*. Then will 360° of longitude be set off; because 18+18=36, which, multiplied by 10°, gives 360°.

4. Through those 36 equal divisions on the equator draw straight and parallel lines at right angles to the equator: these straight and parallel lines will be the meridians 0, 10, 20, 30, &c. and which, on the projection, are continued across the chart at every 20th degree of longitude, east and west of *zero*, or Greenwich.

A TABLE OF MERIDIONAL PARTS.

For the Construction of Mercator's Chart.

Deg.	*Mer. Pts.*	*Deg.*	*Mer. Pts.*	*Deg.*	*Mer. Pts.*	*Deg.*	*Mer. Pts.*	*Deg.*	*Mer. Pts.*
1	60	17	1035	33	2100	49	3382	65	5179
2	120	18	1098	34	2171	50	3474	66	5324
3	180	19	1161	35	2264	51	3569	67	5474
4	240	20	1225	36	2318	52	3665	68	5631
5	300	21	1289	37	2393	53	3764	69	5795
6	361	22	1354	38	2468	54	3865	70	5966
7	421	23	1419	39	2545	55	3968	71	6146
8	482	24	1484	40	2623	56	4074	72	6335
9	542	25	1150	41	2702	57	4183	73	6534
10	603	26	1616	22	2782	58	4294	74	6746
11	664	27	1684	43	2863	59	4409	75	6970
12	725	28	1751	44	2946	60	4527	76	7210
13	787	29	1819	45	3030	61	4649	77	7467
14	848	30	1888	46	3116	62	4775	78	7745
15	910	31	1958	47	3203	63	4905	79	8046
16	973	32	2028	48	3292	64	5039	80	8375

5. To lay down the parallels of this Mercator's chart, look in the foregoing Table of Meridional Parts for the number of parts corresponding to 10° of latitude. They are 603; divide this by 60, and the quotient 1 3 will be 10 *degrees* 3 *minutes*, because the 603 parts are *minutes*; and the divisor 60 is also 60 minutes, equal to 1 degree. Take, then, 10° 3′ from the degrees of longitude on the equator, and set them off, both north and south, from the *zeros* 0, 0, at the extremities of the equatorial line; and draw the parallels of 10° north and south latitude.

6. To lay down the parallel of 20° north or south latitude, divide by 60 the meridional parts answering to 20°,—viz. 1225,—and the quotient 20° 25, taken from the degrees of longitude on the equator, and set off both ways from the point *zero*, will give the exact position of the 20th degree of north and south latitude.

7. The latitude of 30° is 1888′÷60′=31° 20′ taken from the equator, and set off both ways from the *zeros*.

8. That of 40° is 2623′÷60′=43° 43′ taken from the equator, and set off both ways from the points *zero*.

9. That of 50°=3474′÷60′=57° 54′ taken from the equator, and set off both ways from the points *zero*.

10. That of 60°=4527′÷60′=75° 27′, &c.

11. From the points 120°, 10°, 80°, on the equator, draw those lines, which, radiating from a centre, represent the different points of the **MARINER'S COMPASS**, as shewn in the following Table:—

TABLE OF THE ANGLES,

Which every Point and Quarter-Point of the Compass makes with the Meridian.

NORTH.		*Points.*	° ′ ″	*Points.*	SOUTH.	
		0¼	2.48.45	0¼		
		0½	5.37.30	0½		
		0¾	8.26.15	0¾		
N. by E.	N. by W.	1	11.15. 0	1	S. by E.	S. by W.
		1¼	14. 3.45	1¼		
		1½	16.52.30	1½		
		1¾	19.41.15	1¾		
N.N.E.	N.N.W.	2	22.30. 0	2	S.S.E.	S.S.W.
		2¼	25.18.45	2¼		
		2½	28. 7.30	2½		
		2¾	30 56.15	2¾		
N.E. by N.	N.W. by N.	3	33.45. 0	3	S.E. by S.	S.W. by S.
		3¼	36.33.45	3¼		
		3½	39.22.30	3½		
		3¾	42.11.15	3¾		
N.E.	N.W.	4	45. 0. 0	4	S.E.	S.W.
		4¼	47.48 45	4¼		
		4½	50.37.30	4½		
		4¾	53.26.15	4¾		
N.E. by E.	N.W. by W.	5	56.15. 0	5	S.E. by E.	S.W. by W.
		5¼	59. 3.45	5¼		
		5½	61.52 30	5½		
		5¾	64.41.15	5¾		
E.N.E.	W.N.W.	6	67.30. 0	6	E.S.E.	W.S.W.
		6¼	70.18.45	6¼		
		6½	73. 7.30	6½		
		6¾	75.56.15	6¾		
E. by N.	W. by N.	7	78.45. 0	7	E. by S.	W. by S.
		7¼	81.33.45	7¼		
		7½	84.22.30	7½		
		7¾	87.11.15	7¾		
EAST.	WEST.	8	90. 0. 0	8	EAST.	WEST.

12. At every 15th degree in the marginal lines of the chart, at top and bottom, set off the hours I. II. III. IV. V. &c. for the purpose of working the Problems on this map.

13. In fine, complete the chart by faithfully indicating all the chequered and indented sea-coast, it being the chief thing which in this chart claims attention: for, in all charts, the inland country is totally neglected, and, except particular towns, harbours, forts, light-houses, beacons, and rocks, directly on the margin of the sea, the interior country is left unadorned. But, on the water, the winds, currents, shoals, rocks, anchorages, and, in short, all things connected with nautical geography, are carefully and truly laid down, according to their direction, variation, bearing, and distance.

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TABLE

OF THE

LATITUDES OF CONSIDERABLE PLACES

WITH

THEIR LONGITUDES

FROM THE

MERIDIAN OF THE ROYAL OBSERVATORY AT GREENWICH;

Which is Five Minutes, Forty-seven Seconds,

TO THE

EAST OF ST. PAUL'S, LONDON.

A

Places.	*Continent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Aalborg	Europe	Denmark	57	2	56	N	9	57	30	E
Aarhuus	Europe	Denmark	56	9	35	N	10	14	0	E
Aberdeen	Europe	Scotland	57	5	0	N	2	21	30	W
Abbeville	Europe	France	50	7	4	N	1	49	45	E
Abo	Europe	Finland	60	27	7	N	22	15	00	E
Acheen Head	Asia	Sumatra	5	22	0	N	95	26	0	E
Adventure (Bay)	Asia	N. Holland	43	21	20	S	147	31	40	E
Adventure (Isle)	America	Pacific Ocean	17	5	15	S	144	17	45	W
Agimere	Asia	Agimere	26	35	0	N	75	20	0	E
Agra	Asia	India	27	12	30	N	78	17	0	E
Agria	Europe	Hungary	47	53	54	N	20	22	0	E
Aguada (Point)	Asia	India	15	28	55	N	73	48	39	E
Aix	Europe	France	43	31	48	N	5	26	30	E
Aix (Isle)	Europe	France	46	1	38	N	1	11	0	W
Akerman	Europe	Turkey	46	11	58	N	30	43	45	E
Albano	Europe	Italy	41	43	50	N	12	38	0	E
Albany	America	New Wales	52	14	41	N	81	52	50	W
Alkmaer	Europe	Holland	52	38	34	N	4	38	0	E
Aleppo	Asia	Turkey	36	11	25	N	37	10	0	E
Alexandretta	Asia	Syria	36	34	47	N	36	14	45	E
Alexandria	Africa	Egypt	31	11	20	N	70	10	15	E
Algiers	Africa	Algiers	36	49	30	N	2	12	45	E
Altengaard	Europe	Lapland	69	55	0	N	23	4	0	E
Ambrym (Isle)	Asia	Pacific Ocean	16	9	30	S	168	12	30	E
Amesbury	Europe	England	51	10	19	N	1	46	37	W
Amiens	Europe	France	49	53	38	N	2	17	56	E
Amsterdam	Europe	Holland	52	21	56	N	4	51	30	E
Amsterdam (Isle)	Asia	Indian Ocean	37	51	0	S	77	44	0	E
Anadirskoi Noss	Asia	Beering's Straits.	64	14	30	N	173	31	0	W
Ancona	Europe	Italy	43	37	54	N	13	30	30	E

Places.	*Conti-nent.*	*Coast, Sea, or Country*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Andaman (Little)	Asia	Bengal Bay	10	40	0	N	92	24	0	E
Anderson's Island	America	Beering's Straits	63	4	0	N	167	38	0	W
Anger Point	Asia	Java	6	3	17	S	106		57	E
Angers	Europe	France	47	28	8	N	0	33	52	W
Angouleme	Europe	France	45	39	3	N	0	8	47	E
C. Angra Pequena	Africa	Caffraria	26	36	50	S	15	16	30	E
Anholt (Lights)	Europe	Categat	56	44	20	N	11	40	0	E
Anjenga	Asia	India	8	39	25	N	76	50	04	E
St. Ann (Cape)	Africa	Sierra Leone	7	7	30	N	12	22	0	W
Annamaboe	Africa	Gold Coast	5	9	52	N	1	39	4	W
Annamocka	Asia	Pacific Ocean	20	15	20	S	174	45	0	W
Annobona	Africa	Atlantic Ocean	1	25	0	S	5	45	0	E
St. Anthony's (Cape)	America	Staten Land	54	46	45	S				
Antibes	Europe	France	43	34	43	N	7	7	20	E
Antigua (St. John's)	America	Carib Sea	17	4	30	N	62	9	0	W
Anton. Gill's Bay	Africa	Madagascar	15	27	23	S	50	23	15	E
Antwerp	Europe	Flanders	51	13	18	N	4	24	15	E
Aor (Pulo)	Asia	Chinese Seas	2	45	0	N	104	40	20	E
Apæ (Isle)	Asia	Pacific Ocean	16	46	15	S	168	27	30	E
C. Apollonia	Africa	Gold Coast	4	59	12	N	3	10	11	W
F. Apollonia	Africa	Gold Coast	4	59	14	N	3	4	37	W
Arakootai Isle	America	Pacific Ocean	20	1	30	S	158	14	30	W
Archangel	Europe	Russia	64	34	0	N	38	54	30	E
Arcot	Asia	Arcot	12	51	24	N	79	28	4	E
Arensburg	Europe	Baltic	58	15	9	N	22	13	15	E
Arica	America	Peru	18	26	40	S	71	13	0	W
Arles	Europe	France	43	40	28	N	4	37	24	E
Arras	Europe	France	50	17	37	N	2	45	41	E
Ascension (Isle)	Africa	South Atl. Ocean	7	56	30	S	14	21	15	W
Astracan	Asia	Siberia	46	21	12	N	48	2	45	E
Athens	Europe	Turkey	38	5	0	N	23	52	30	E
Atooi	America	Sandwich Isles	21	57	0	N	159	39	30	W
St. Augustin (Bay)	Africa	Madagascar	23	27	52	S	44	09	0	E
Aurora (Isle)	Asia	Pacific Ocean	15	8	0	S	168	17	0	E
Avignon	Europe	France	43	56	58	N	4	48	10	E
Avranches	Europe	France	48	41	21	N	1	21	51	W
Awatscha	Asia	Kamtschat	53	0	37	N	158	44	30	E

B

Babee (Pulo)	Asia	Straits of Sunda	5	45	0	N	106	20	30	E
Babylon (Ancient)	Asia	Mesopotamia	33	0	0	N	42	46	30	E
Bagdad	Asia	Mesopotamia	33	19	40	N	44	22	15	E
Balasore	Asia	India	21	20	0	N	87	1	26	E
Ballabea (Isle)	Asia	New Caledonia	20	7	0	S	164	22	0	E
Banana (Big)	Africa	Sierra Leone	8	5	30	N	13	5	0	E
Bangalore	Asia	Mysore	13	0	0	N	77	37	10	E
Banguey (Peak)	Asia	Malacca	7	18	0	N	117	17	30	E
Bank's Isle	Asia	New Zeeland	43	43	0	S	173	3	55	E
Bantam Point	Asia	Java	5	50	20	S	106	9	3	E

Places.	Continent.	Coast, Sea, or Country.	Latitude.				Longitude in Degrees.			
			°	′	″		°	′	″	
Barbas (Cape)	Africa	Sanhaga	22	15	30	N	16	40	0	E
Barbuda (Isle)	America	Atlantic Ocean	17	49	45	N	61	50	0	W
Barcelona	Europe	Spain	41	26	0	N	2	13	0	E
Barfleur (Cape)	Europe	France	49	40	21	N	1	15	36	W
Barnevelt's (Isle)	America	Terra del Fuego	55	49	0	S	66	58	0	W
St. Bartholomew (Isle)	Asia	New Hebrides	15	42	0	S	167	17	30	E
Basle	Europe	Switzerland	47	33	34	N	7	35	12	E
Basseen (Fort)	Asia	India	19	19	0	N	72	55	24	E
Basses (Great)	Asia	Ceylon	6	7	30	N	81	42	50	E
Batavia	Asia	Java	6	11	0	S	106	50	0	E
Bath	Europe	England	51	22	30	N	2	21	30	W
Bauld (Cape)	America	Newfoundland	51	39	45	N	55	27	50	W
Bayonne	Europe	France	43	29	15	N	1	28	41	W
Beachy Head	Europe	England	50	44	24	N	0	15	12	E
Bear (Isle)	America	Hudson's Bay	54	34	0	N	79	56	0	W
Beering's Island	Asia	Beering's Straits	55	36	0	N	167	46	0	E
Belle Isle	Europe	France	47	17	17	N	3	5	0	W
Bencoolen	Asia	Sumatra	3	49	9	S	102	2	25	E
Bender	Europe	Turkey	46	50	29	N	29	36	0	E
Bergen	Europe	Norway	60	23	40	N	5	11	30	E
Berlin	Europe	Germany	52	31	30	N	13	23	0	E
Bermudas (Isle)	America	Atlantic Ocean	32	35	0	N	63	28	0	W
Bernaul	Asia	Siberia	53	19	59	N	82	12	15	E
Besançon	Europe	France	47	14	12	N	6	2	46	E
Bessested	Europe	Iceland	64	6	9	N	21	53	45	W
Bird Island	America	Pacific Ocean	17	49	0	S	142	43	24	W
Blanco (Cape)	Africa	Negroland	20	55	30	N	17	10	0	W
Blanco (Cape)	America	Patagonia	47	20	0	S	64	42	0	W
Blanco (Cape)	America	Pacific Ocean	43	12	0	N	124	7	30	W
Boddam's Island	Asia	Indian Ocean	5	22	0	S	72	15	0	E
Bojador (Cape)	Africa	Negroland	26	12	30	N	14	27	0	W
Botabolo (Isle)	America	Pacific Ocean	16	32	30	S	151	52	0	W
Bologna	Europe	Italy	44	29	36	N	11	20	25	E
Bolcheretsk	Asia	Kamtchatka	52	54	30	N	156	56	40	E
Bolt Head	Europe	England	50	17	0	N	3	53	30	W
Bombay	Asia	India	18	55	42	N	72	54	24	E
Bonavista (Isle)	Africa	Cape Verd	16	3	40	N	22	45	32	W
Boscawen's Isle	Asia	Pacific Ocean	15	50	0	S	174	7	40	W
Boston	America	New England	42	25	0	N	70	37	15	W
Botany Bay	Asia	New Holland	34	6	0	S	151	15	0	E
Boulogne	Europe	France	50	43	33	N	1	36	33	E
Bourbon (Isle)	Africa	Indian Ocean	20	50	54	S	55	30	0	E
Bourdeaux	Europe	France	44	50	14	N	0	34	15	W
Bourgas	Asia	Turkey	40	14	30	N	26	26	52	E
Bow Island	America	Pacific Ocean	18	17	0	S	140	43	0	W
Brandenburg	Europe	Germany	52	27	0	N	12	53	0	E
Brasse (Pulo)	Asia	Strait of Malacca	....				95	11	0	E
Brava (Isle)	Africa	Cape Verd	14	50	58	N	24	43	4	W
Breaker's Point	America	Pacific Ocean	49	15	30	N	126	41	30	W
Bremen	Europe	Germany	53	5	11	N	8	49	34	E

Places.	Conti-nent.	Coast, Sea, or Country.	Latitude.				Longitude in Degrees.			
			°	′	″		°	′	″	
Breslaw	Europe	Silesia	51	6	30	N	17	35	30	E
Brest	Europe	France	48	22	42	N	4	30	0	W
Bridge Town	America	Barbadoes	13	5	0	N	59	41	15	W
Brighthelmstone	Europe	England	50	49	32	N	0	11	55	W
Bristol	Europe	England	51	28	0	N	2	34	45	W
Bristol (Cape)	America	Sandwich Land.	59	2	30	S	26	51	0	W
Bristol River	America	Beering's Straits.	58	27	0	N	158	7	30	W
Broach Point	Asia	India	21	38	30	N	72	43	24	E
Brothers (The)	Asia	Sea of Borneo	5	10	20	S	106	14	4	E
Bruges	Europe	Netherlands	51	12	20	N	4	13	13	E
Brussels	Europe	Brabant	50	51	0	N	3	21	15	E
Buda	Europe	Hungary	47	29	44	N	19	0	0	E
Buenos Ayres	America	Brasil	34	35	26	S	58	23	38	W
Bukarost	Europe	Wallachia	44	26	45	N	26	8	0	E
Buller (Cape)	America	S. Georgia	53	58	30	S	37	40	0	W
Burgeo (Isles)	America	Newfoundland	47	36	20	N	57	36	0	W
Burhanpour	Asia	India	21	19	0	N	76	22	0	E
Byron's Isle	Asia	Pacific Ocean	1	13	0	S	177	8	0	E

C

Cabello (Port)	America	Terra Firma	10	30	50	N	67	32	0	W
Cape Cabron	America	Hispaniola	19	21	52	N	69	18	40	W
Cadiz	Europe	Spain	36	31	7	N	6	17	15	W
Caen	Europe	France	49	11	12	N	0	21	53	W
Cairo	Africa	Egypt	30	3	30	N	31	25	30	E
Calais	Europe	France	50	57	32	N	1	51	0	E
Calcutta	Asia	Bengal	22	34	45	N	88	27	56	E
Callao	America	Peru	12	1	53	S	76	58	0	W
Calmar	Europe	Sweden	56	40	30	N	16	25	15	E
Cambridge	Europe	England	52	12	36	N	0	4	15	E
Cambridge	America	New England	42	25	0	N	71	6	0	W
Campbell (Cape)	Asia	New Zealand	41	40	48	S	174	33	0	E
Canary (Isle) N.E. Pt.	Africa	Atlantic Ocean	28	13	0	N	15	38	45	W
Candia (Isle)	Europe	Mediterran. Sea.	35	18	35	N	25	18	0	E
Candlemas (Isles)	America	Sandwich Land.	57	10	0	S	27	13	0	W
Cananore (Point)	Asia	India	11	51	0	N	75	25	00	E
Canso (Port)	America	Nova Scotia	45	20	7	N	60	55	0	W
Canterbury	Europe	England	51	18	26	N	1	4	53	E
Canton	Asia	China	23	6	57	N	113	16	7	E
Capricorn (Cape)	Asia	New Holland	23	26	40	S	151	5	40	E
Carlescroon	Europe	Sweden	56	20	0	N	15	30	0	E
Carisbrook Castle	Europe	Isle of Wight	50	41	18	N	1	18	26	W
Carrickfergus	Europe	Ireland	54	43	0	N	5	45	30	W
Carthagena	Europe	Spain	37	36	7	N	1	1	30	W
Carthagena	America	Terra Firma	10	26	19	N	75	20	35	W
Carwar Head	Asia	India	14	47	0	N	74	12	30	E
Casan	Asia	Siberia	55	43	58	N	49	29	30	E
Casbine	Asia	Persia	36	11	0	N	49	33	0	E
Cassel (Hesse)	Europe	Germany	51	19	20	N	9	31	45	E
St. Catharine's Isle	America	Brasil	27	32	30	S	49	15	37	W

Places.	*Continent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Cayenne	America	Isle Cayenne	4	56	15	N	52	15	0	W
Chain Island	America	Pacific Ocean	17	25	30	S	145	30	0	W
Chandernagore	Asia	Bengal	21	51	26	N	88	29	15	E
Charkow	Europe	Russia	49	59	20	N	36	15	0	E
Charles (Cape)	America	Hudson's Straits	62	46	30	N	74	15	0	W
Q. Charlotte's Cape	America	South Georgia	54	32	0	S	36	11	30	W
Q. Charlotte's Isle	America	Pacific Ocean	19	18	0	S	138	20	0	W
Charlotte Town	America	St. John's Island.	46	14	0	N	62	50	0	W
Charlton Island	America	Hudson's Bay	52	3	0	N	79	5	0	W
Cherbourg	Europe	France	49	38	31	N	1	37	18	W
Cherson	Europe	Crimea	46	38	29	N	32	56	15	E
Chichester	Europe	England	50	50	11	N	0	46	36	W
Christiana	Europe	Norway	59	55	20	N	10	48	45	E
Christmas Harbour	Africa	Kergulen's La.	48	41	15	S	69	2	0	E
Christmas Isle	America	Pacific Ocean	1	57	45	N	157	35	0	W
Christmas Sound	America	Terra del Fuego	55	21	57	S	70	2	50	W
St. Christopher's	America	Carib. Sea	17	15	0	N	62	42	20	W
Churchill River	America	Hudson's Bay	58	47	32	N	94	13	48	W
Civita Vecchia	Europe	Italy	42	5	24	N	11	46	15	E
Clear (Cape)	Europe	Ireland	51	19	0	N	9	23	15	W
Clerke's Isle	Asia	Beering's Straits.	63	15	0	N	169	40	0	W
Clerke's Rocks	America	Atlantic Ocean	55	5	30	S	34	42	0	W
Cochin	Asia	Malabar	9	58	0	N	76	15	34	E
Colenet (Cape)	Asia	New Caledonia	20	30	0	S	164	56	0	E
Cologne	Europe	Germany	50	55	21	N	6	55	0	E
Colville (Cape)	Asia	New Zeeland	36	24	45	S	175	48	50	E
Comorin (Cape)	Asia	India	8	4	0	N	77	33	50	E
Conception	America	Chili	36	42	54	S	73	6	18	W
Condore (Pulo)	Asia	Chinese Sea	8	40	48	N	106	42	54	E
Constantinople	Europe	Turkey	41	1	10	N	28	55	5	E
Cooper's Isle	America	Atlantic Ocean	54	57	0	S	36	4	20	W
Copenhagen	Europe	Denmark	55	41	4	N	12	35	10	E
Coquimbo	America	Chili	29	54	33	S	71	15	45	W
Cork	Europe	Ireland	51	53	54	N	8	28	15	W
Cornwallis (Port)	Asia	Andaman	13	20	30	N	92	51	0	E
Cornwallis (Fort)	Asia	Pulo Pinnang	5	27	0	N	100	26	30	E
Coronation (Cape)	Asia	N. Caledonia	22	5	0	S	167	8	0	E
Corvo	Europe	Azores	39	43	38	N	31	4	56	E
Coudre Isle (N.W. si.)	America	Canada	47	15	33	N	70	18	57	W
Coullaba Island	Asia	Indian Ocean	18	37	20	N	72	56	30	E
Courtray	Europe	Netherlands	50	49	43	N	3	15	51	E
Cowes (West)	Europe	Isle of Wight	50	46	18	N	1	17	17	W
Cracatoa (Isle)	Asia	Straits of Sunda.	6	6	0	S	105	31	40	E
Cracow	Europe	Poland	50	10	0	N	19	50	0	E
Crooked Isle	America	Lucayes	22	48	50	N	74	26	5	W
Croque Harbour	America	Newfoundland	51	3	17	N	55	50	0	W
Cross Cape	America	Pacific Ocean	57	58	30	N	136	44	30	W
Cuddalore	Asia	India	11	41	0	N	79	37	45	E
Cumberland (Cape)	Asia	New Hebrides	14	39	30	S	166	47	0	E
Cumberland Ho.	America	New Wales	53	56	40	N	102	9	0	W

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Cumberland Isle	America	Pacific Ocean	19	18	0	S	140	52	0	W
Cummin (Isle)	Asia	Chinese Sea	31	40	0	N	121	4	0	E
Curreuse Isle	Asia	Almirantes	4	19	0	S	55	47	0	E
D										
Damoan Fort	Asia	India	20	22	0	N	73	2	45	E
Danger (Point)	Asia	New Holland	28	8	22	S	153	33	10	E
Danger (Isle of)	Asia	Pacific Ocean	10	56	0	S	165	59	0	W
Dantzig	Europe	Poland	54	22	0	N	18	40	0	E
Darby (Cape)	America	Beering's Straits.	64	21	0	N	163	0	0	W
Dassen Island	Africa	Caffers	33	25	0	N	18	1	52	E
Deal Castle	Europe	England	51	13	5	N	1	23	59	E
Delhi	Asia	India	28	37	0	N	77	40	0	E
Dengeness	Europe	England	50	54	52	N	0	57	40	E
Dennis (St.)	Africa	I. Bourbon	20	51	43	S	55	30	0	E
Dereham (East)	Europe	England	52	40	20	N	0	54	30	E
Devi-cotta	Asia	India	11	21	0	N	79	47	0	E
Diamond Island	Asia	Bay of Bengal	15	50	0	N	94	17	54	E
Diarbekir	Asia	Diarbek	37	54	0	N	39	20	0	E
Diego (Cape)	America	Terra del Fuego.	54	33	0	S	65	14	0	W
Diego Garcia	Asia	Indian Ocean	7	20	0	S	72	24	52	E
Diego Ramirez	America	Southern Ocean.	56	32	30	S	67	55	0	W
Dieppe	Europe	France	49	55	34	N	1	4	29	E
Digges (Isle)	America	Hudson's Bay	62	41	0	N	78	50	0	W
Dijon	Europe	France	47	19	25	N	5	1	48	E
Dilla (Mount)	Asia	Malabar Coast	11	59	40	N	75	14	30	E
Disappointment (Cape)	America	South Georgia	54	58	0	S	36	15	0	W
Disappointment (Isle)	America	Pacific Ocean	14	7	0	S	141	22	0	W
Diseada (Cape)	America	Terra del Fuego.	53	4	15	S	74	18	0	W
Diserada	America	Carib. Isles	16	35	0	N	61	11	15	W
Dieu Head	Asia	Guzerat	20	42	0	N	71	3	30	E
Dix Cove Fort	Africa	Gold Coast	4	44	0	N	2	37	44	W
Domar (Pulo)	Asia	Chinese Sea	2	47	0	N	105	21	0	E
Dominique (Isle)	America	Windward Isles	15	18	23	N	61	35	30	W
Donna Maria (Cape)	America	Hispaniola	18	37	20	N	74	35	52	W
Dorchester	Europe	England	50	42	58	N	2	25	40	W
Douglas (Cape)	America	Cook's River	58	56	0	N	153	50	0	W
Dover	Europe	England	51	7	48	N	1	19	2	E
Dresden	Europe	Saxony	51	2	54	N	13	41	15	E
Drontheim	Europe	Norway	63	26	6	N	10	22	0	E
Dublin	Europe	Ireland	53	22	0	N	6	17	0	W
Dundee	Europe	Scotland	56	25	0	N	3	2	30	W
Dundra-Head	Asia	Ceylon	5	51	0	N	80	41	20	E
Dunkirk	Europe	France	51	2	9	N	2	22	4	E
Dusky Bay	Asia	New Zeeland	45	47	27	S	166	18	9	E
Dun-Nose	Europe	England	50	37	7	N	1	11	36	W
E										
Eaoowe (Isle)	Asia	Pacific Ocean	21	24	20	S	174	30	0	W
East Cape	Asia	Beering's Straits.	66	5	30	N	169	44	0	W
East Cape	Asia	New Zeeland	37	44	25	N	178	58	0	E

Places.	*Conti- nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Easter Island	America	Pacific Ocean	27	6	30	S	109	46	45	W
Edgecumbe (Cape)	America	Pacific Ocean	57	4	30	N	135	55	30	W
Edinburgh	Europe	Scotland	55	56	42	N	3	12	15	W
Edystone	Europe	English Channel	50	8	0	N	4	24	0	W
Egmont (Cape)	Asia	New Zeeland	39	23	20	S	174	12	30	E
Egmont (Isle)	America	Pacific Ocean	19	20	0	S	138	46	0	W
Eimeo (Isle)	America	Pacific Ocean	17	30	0	S	149	54	0	W
Elias's (St.) Mount	America	Pacific Ocean	60	24	30	N	141	0	0	W
Elephant Point	Asia	Ceylon	6	20	0	N	81	39	15	E
Elizabeth (Cape)	America	Pacific Ocean	59	11	0	N	152	12	0	W
Elmina Castle	Africa	Gold Coast	5	1	38	N	2	0	12	W
Enatum (Isle)	Asia	Pacific Ocean	20	10	0	S	170	4	0	E
Endeavour River	Asia	New Holland	15	27	11	S	145	10	0	E
Espiritu Santo	America	Cuba	21	57	41	N	79	49	30	W
Exeter	Europe	England	50	44	0	N	3	34	30	W
		F								
Fairlight	Europe	England	50	52	39	N	0	38	35	E
Falmouth	Europe	England	50	8	0	N	5	3	0	W
False Bay	Africa	Caffres	34	10	0	S	18	33	0	E
Farewell (Cape)	America	Greenland	59	38	0	N	42	42	0	W
Farewell (Cape)	Asia	New Zeeland	40	37	0	S	172	49	38	E
Fayal (Town)	Europe	Azores	38	32	20	N	28	41	5	W
Felix and Amb. Isles.	America	Pacific Ocean	26	16	0	S	79	16	0	W
Ferdinand Noronha	America	Brasil	3	56	20	S	32	38	0	W
Ferro (Town)	Africa	Canaries	27	47	35	N	17	45	8	W
Finisterre (Cape)	Europe	Spain	42	53	30	N	9	18	24	W
Florence	Europe	Italy	43	46	30	N	11	3	30	E
Flores	Europe	Azores	39	26	20	N	31	11	22	W
Flushing	Europe	Holland	51	26	37	N	3	34	9	E
Foggy Island	America	Pacific Ocean	56	12	0	N	157	19	30	W
Folkstone	Europe	England	51	5	45	N	1	11	29	W
Fontarabia	Europe	Spain	43	21	36	N	1	47	29	W
S. Foreland	Europe	England	51	8	21	N	1	22	6	E
No. Foreland	Europe	England	51	22	40	N	1	26	22	E
Foul Point	Africa	Madagascar	17	40	14	S	49	52	30	E
Foulweather (Cape)	America	Pacific Ocean	44	53	0	N	124	10	0	W
France (Isle of)	Africa	Indian Ocean	20	9	43	S	57	31	30	E
Francfort	Europe	Germany	50	7	40	N	8	35	45	E
François (Old Cape)	America	Hispaniola	19	40	30	N	70	2	0	W
Free Town	Africa	Sierra Leone	8	29	40	N	13	5	17	W
Frejus	Europe	France	43	25	52	N	6	43	54	E
Frio (Cape)	America	Brasil	22	54	0	S	42	8	15	W
Frio (Cape)	Africa	Caffraria	18	40	0	S	12	26	0	E
Faego (Isle)	Africa	Cape Verd	14	57	2	N	24	22	2	W
Funchal	Africa	Madeira	22	37	20	N	16	55	36	W
Furneaux (Island)	America	Pacific Ocean	17	11	0	S	143	6	40	W
		G								
Gabey	Asia	New Guinea	0	6	0	S	126	23	45	E
Galle (Cape de)	Asia	Ceylon	6	1	0	N	80	19	20	E

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Gallipoli	Europe	Turkey	40	25	33	N	26	37	15	E
Gaspar (Island)	Asia	Straits of Gaspar	2	25	0	S	107	7	45	E
Gaspee	America	G. St. Lawrence.	48	47	30	N	64	27	30	W
Geneva	Europe	Savoy	46	12	17	N	6	8	24	E
Genoa	Europe	Italy	44	25	0	N	8	51	15	E
St. George (Island)	Europe	Azores	38	53	30	N	28	10	0	W
St. George (Town)	America	Bermudas	32	22	20	N	64	14	15	W
St. George (Fort)	Asia	India	13	4	54	N	80	24	49	E
St. George (Cape)	Americ	Newfoundland	48	30	5	N	59	20	33	W
St. George (Cape)	Asia	New Holland	35	10	30	S	150	29	0	E
St. George (Cape)	Asia	New Britain	4	53	30	S	153	8	45	E
George (Cape)	America	South Georgia	54	17	0	S	36	32	30	W
Geriah	Asia	Malabar	16	37	0	N	73	22	24	E
Ghent	Europe	Flanders	51	3	15	N	3	43	20	E
Gibraltar	Europe	Spain	36	4	44	N	5	4	0	W
Glasgow	Europe	Scotland	55	51	32	N	4	16	0	W
Glocester Isle	America	Pacific Ocean	19	11	0	S	140	20	0	W
Gluchow	Europe	Russia	51	40	30	N	34	20	0	E
Goa	Asia	India	15	28	20	N	73	58	39	E
Goat Isle	Asia	Chinese Sea	13	55	0	N	120	2	0	E
Gomera (Isle)	Africa	Canaries	28	5	40	N	17	8	0	W
Good Hope (Cape)	Africa	Caffraria	34	29	0	S	18	23	15	E
Good Hope (Town)	Africa	Caffraria	33	55	42	S	18	23	7	E
Goree (Isle)	Africa	Atlantic Ocean	14	40	5	N	17	24	30	W
Gotha	Europe	Germany	50	56	17	N	10	41	46	E
Gottenburgh	Europe	Sweden	57	42	0	N	11	57	30	E
Gottingen	Europe	Germany	51	31	54	N	9	54	15	E
Grafton (Cape)	Asia	New Holland	16	53	30	S	145	42	45	E
Gratz	Europe	Germany	47	4	9	N	15	25	45	E
Greenwich	Europe	England	51	28	40	N	0	0	0	
Grenoble	Europe	France	45	11	42	N	5	43	34	E
Guadaloupe	America	Carib. Sea	15	59	30	N	61	48	15	W
Guiaquil	America	Peru	2	11	18	S	79	20	52	W
Gurief	Asia	Siberia	47	7	7	N	51	59	15	E
H										
Hague	Europe	Holland	52	4	12	N	4	16	2	E
Halifax	America	Nova Scotia	44	44	0	N	63	36	0	W
Hamburgh	Europe	Germany	53	33	3	N	9	55	15	E
Hanover	Europe	Germany	52	22	18	N	9	44	15	E
Harbro' (Market)	Europe	England	52	28	30	N	0	57	25	W
Haerlem	Europe	Holland	52	22	14	N	4	37	0	E
Harrow	Europe	England	51	34	27	N	0	20	3	W
Hastings	Europe	England	50	52	10	N	0	41	10	E.
Havannah	America	Cuba	23	11	52	N	82	8	36	W
Havant	Europe	England	50	51	5	N	0	58	38	W
Havre-de-Grace	Europe	France	49	29	14	N	0	6	23	E
St. Helena	Africa	S. Atlantic Ocean	15	55	0	S	5	43	30	W
Henlopen (Cape)	America	Virginia	38	47	8	N	75	12	31	W
Henry (Cape)	America	Virginia	36	57	0	N	76	31	30	W

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Hernosand	Europe	Sweden	62	38	0	N	17	50	15	E
Hervey's (Isle)	America	Pacific Ocean	19	17	0	S	158	56	20	W
Hogue (Cape La)	Europe	France	49	44	40	N	1	56	50	W
Hola	Europe	Iceland	65	44	0	N	19	44	0	W
Holme Point	Europe	England	52	59	40	N	0	30	45	E
Hood's Isle	America	Pacific Ocean	9	26	0	S	138	52	0	W
Horn (Cape)	America	Terra del Fuego.	55	58	30	S	67	26	0	W
Horsham	Europe	England	51	3	36	N	0	19	43	W
Howe's Isle	America	Pacific Ocean	16	46	30	S	154	6	40	W
Howe (Cape)	Asia	New Holland	37	31	15	S	145	31	0	E
Huahine (Isle)	America	Pacific Ocean	16	44	0	S	151	6	0	W
Hudson's House	America	New Wales	53	0	32	N	106	27	48	W
Hydrabad	Asia	Golconda	17	12	0	N	78	51	0	E
		I J								
Jackson (Port)	Asia	New Holland	33	51	7	S	151	13	30	E
Jakutsk	Asia	Siberia	62	1	52	N	129	43	30	E
Janeiro (Rio)	America	Brazil	22	54	10	S	43	10	45	W
Jassey	Europe	Moldavia	47	8	32	N	27	29	45	E
Java Head	Asia	Java	6	48	30	S	105	7	25	E
Icy Cape	America	Beering's Straits.	70	29	0	N	161	42	30	W
Jenikola	Europe	Crimea	45	21	0	N	36	26	30	E
Janiseik	Asia	Siberia	58	27	17	N	91	58	30	E
Jerusalem	Asia	Palestine	31	55	0	N	35	20	0	E
Ingolstadt	Europe	Germany	48	45	50	N	11	25	30	E
St. John's	America	Antigua	17	4	30	N	62	9	0	W
St. John's	America	Newfoundland	47	32	44	N	52	25	30	W
St. Joseph	America	California	23	3	37	N	109	40	45	W
Irkutsk	Asia	Siberia	52	18	8	N	104	33	30	E
Isle of Pines	Asia	Pacific Ocean	22	38	0	S	167	38	0	E
Ismael	Europe	Turkey	45	20	58	N	28	50	0	E
Ispahan	Asia	Persia	32	24	34	N	51	50	0	E
Juan Fernandes (Isle)	America	Pacific Ocean	33	40	0	S	78	33	0	W
Judda	Asia	Arabia	21	29	0	N	39	22	0	E
St. Julian (Port)	America	Patagonia	49	10	0	S	68	44	0	W
		K								
Kalouga	Europe	Russia	54	30	0	N	36	5	0	E
Keeling's Islands	Asia	Indian Ocean	12	3	15	S	97	38	30	E
Kayes Island	America	Pacific Ocean	59	52	0	N	145	0	0	W
Kiam-Cheu	Asia	China	35	37	0	N	111	29	15	E
Kiel	Europe	Holstein	54	22	25	N	9	24	45	E
Kinsale	Europe	Ireland	51	41	30	N	8	28	15	W
Kiow	Europe	Ukraine	50	27	0	N	30	27	30	E
Koamaroo (Cape)	Asia	New Zealand	41	4	48	S	174	34	30	E
Kola	Europe	Lapland	68	52	26	N	33	1	30	E
Kormantini Fort	Africa	Gold Coast	5	10	58	N	1	34	24	W
Korsar (Lights)	Europe	Denmark	55	20	22	N	11	8	30	E
Kosloff	Europe	Crimea	45	14	0	N	33	25	0	E
Kullen (Lights)	Europe	Sweden	56	18	3	N	12	26	14	E
Kursk	Europe	Russia	51	43	30	N	36	27	30	E

L

Places.	*Continent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Ladrone (Grand)	Asia	Chinese Sea	22	2	0	N	113	56	0	E
Lagoon Isle (Cook's).	America	Pacific Ocean	18	46	33	S	138	54	15	W
Lagoon Isle (Bligh's).	America	Pacific Ocean	21	38	0	S	140	37	0	W
Lagos	Europe	Turkey	40	58	42	N	25	3	21	E
Laguna	Africa	Teneriffe	28	28	31	N	16	27	13	W
Lambhuus	Europe	Iceland	64	6	17	N	21	54	30	W
Lampsaco	Asia	Turkey	40	20	52	N	26	36	20	E
Landau	Europe	France	49	11	38	N	8	7	30	E
Landscroon	Europe	Sweden	55	52	23	N	12	48	0	E
Lausanne	Europe	Switzerland	46	31	5	N	6	45	15	E
Leeds	Europe	England	53	47	33	N	1	38	30	W
Leicester	Europe	England	52	38	0	N	1	8	30	W
Leipsic	Europe	Saxony	51	22	22	N	12	20	30	E
Leostoffe	Europe	England	52	29	0	N	1	44	9	E
Leskeard	Europe	England	50	26	50	N	4	41	45	W
Liverpool	Europe	England	53	22	0	N	2	56	45	W
Lewis Town	America	Pennsylvania	38	47	27	N	75	15	48	W
Leyden	Europe	Holland	52	8	40	N	4	28	0	E
Liege	Europe	Netherlands	50	39	26	N	5	31	30	E
Lima	America	Peru	12	1	56	S	76	54	0	W
Limoges	Europe	France	45	49	44	N	1	15	55	E
Lintz	Europe	Germany	48	16	0	N	13	57	30	E
Lisle	Europe	Flanders	50	37	50	N	3	4	16	E
Lisbon	Europe	Portugal	38	42	20	N	9	9	10	W
Lion's Bank	Europe	Atlantic Ocean	56	40	0	N	17	45	0	W
Lisburne (Cape)	America	Beering's Straits.	69	5	0	N	165	22	30	W
Livourno (Leghorn)	Europe	Italy	43	33	2	N	10	16	30	E
Lizard	Europe	England	49	57	30	N	5	13	0	W
London (St. Paul's)	Europe	England	51	30	49	N	0	5	47	W
———Somerset Place	Europe	England	51	30	43	N	0	6	54	W
Londonderry	Europe	Ireland	54	59	28	N	7	14	49	W
Lorenzo (Cape)	America	Peru	1	2	0	S	80	59	45	W
Loretto	Europe	Italy	43	27	0	N	13	34	50	E
Louis (Port)	America	Hispaniola	18	18	40	N	73	16	49	W
Louis (Port)	Africa	Mauritius	20	9	44	S	57	28	15	E
Louisburg	America	Cape Breton	45	53	50	N	59	59	15	W
Louvain	Europe	Netherlands	50	53	26	N	4	41	32	E
St. Lucia (Isle)	America	Antilles	13	24	30	N	60	51	30	W
Lunden	Europe	Sweden	55	42	13	N	13	11	5	E
Luxembourg	Europe	Netherlands	49	37	20	N	6	13	45	E
Lydd	Europe	England	50	57	7	N	0	54	15	E
Lynn Regis	Europe	England	52	45	34	N	0	24	29	E
Lyons	Europe	France	45	45	52	N	4	49	9	E

M

Places.	*Continent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
Macao	Asia	China	22	11	20	N	113	35	15	E
Macassar	Asia	Celebes	5	9	0	S	119	48	45	E
Madeira (Funchal)	Africa	Atlantic Ocean	32	37	20	N	16	55	36	E

Places.	*Continent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Madras	Asia	India	13	4	54	N	80	24	49	E
Madrid	Europe	Spain	40	25	18	N	3	38	30	W
Maestricht	Europe	Netherlands	50	51	7	N	5	40	45	E
Magdalen (Isles)	America	G. St. Lawrence.	47	17	0	N	61	26	0	W
Mahon (Port)	Europe	Minorca	39	51	48	N	3	48	30	E
Majorca (Isle)	Europe	Mediterran. Sea.	39	35	0	N	2	29	45	E
Malacca	Asia	India	2	12	6	N	102	8	45	E
Maloes (St.)	Europe	France	48	39	3	N	2	1	26	W
Malmoe	Europe	Sweden	55	36	37	N	13	1	4	W
Malta (Town)	Africa	Mediterran. Sea.	35	53	50	N	14	28	30	E
Manchester	Europe	England	53	26	30	N	2	15	0	W
Mangalore	Asia	Malabar	12	50	0	N	74	57	24	E
Manheim	Europe	Germany	49	28	59	N	8	27	22	E
Manilla	Asia	Philippines	14	36	8	N	120	51	15	E
Mansfelt (Isle)	America	Hudson's Bay	62	38	30	N	80	33	0	W
Marigalante (Isle)	America	Atlantic Ocean	15	55	15	N	61	11	0	W
Marmara (Isle)	Asia	Sea of Marmara.	40	37	4	N	27	30	35	E
Marseilles	Europe	France	43	17	43	N	5	22	12	E
St. Martha	America	Terra Firma	11	19	2	N	74	4	30	W
St. Martin's Cape	Africa	St. Helen's Bay.	32	41	43	S	17	55	0	E
St. Martin's Isle	America	Carib. Sea	18	4	20	N	63	2	0	W
Martinico (Isle)	America	West Indies	14	44	0	N	61	21	16	W
St. Mary's Isle	Europe	Scilly Isles	49	55	30	N	6	16	45	W
St. Mary's Town	Europe	Azores	36	56	40	N	25	9	10	W
Mas-a-fuera (Isle)	America	Pacific Ocean	33	45	0	S	80	22	0	W
Maskelyne's Isles	Asia	New Hebrides	16	32	0	S	167	59	15	E
Masulipatam	Asia	India	16	8	30	N	81	11	45	E
Mauritus (Port Louis)	Africa	Indian Ocean	20	9	45	S	57	29	15	E
Mayence	Europe	Germany	49	54	0	N	8	20	0	E
Meaux	Europe	France	48	57	40	N	2	52	30	E
Metz	Europe	France	49	7	10	N	6	10	13	E
Mexico	America	Mexico	19	54	0	N	99	41	45	W
St. Michael's Isle	Europe	Azores	37	47	0	N	25	42	0	W
Middleburg	Europe	Zealand	51	30	6	N	3	36	35	E
Middleburgh (Isle)	Asia	Friendly Isles	21	20	30	N	174	34	0	W
Milan	Europe	Italy	45	28	0	N	9	10	52	E
Milo (Isle)	Europe	Mediterran. Sea.	36	41	0	N	25	0	0	E
Mittau	Europe	Courland	56	39	10	N	23	42	45	E
Mocca	Asia	Arabia	13	16	0	N	44	0	0	E
Mocha (Isle)	America	Pacific Ocean	38	22	30	S	74	37	0	W
Modena	Europe	Italy	44	34	0	N	11	12	30	E
Mohilew	Europe	Russia	53	54	0	N	30	24	30	E
Montague (Isle)	Asia	New Hebrides	17	26	0	S	168	31	30	E
Monte-Christi	America	Peru	1	2	0	S	80	49	15	W
Montego Bay	America	Jamaica	18	31	0	N	78	20	0	W
Montpellier	Europe	France	43	36	29	N	3	51	45	E
Montserrat (Isle)	America	Carib. Sea	16	49	0	N	62	27	0	W
Moose Fort	America	New Wales	51	15	54	N	80	54	41	W
Morant (Point)	Europe	Jamaica	17	58	0	N	76	15	45	W
Moscow	America	Moscovy	55	45	20	N	37	46	15	E

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Mosketto Cove	America	Greenland	64	55	13	N	52	56	45	W
Mowee (East Point)	America	Sandwich Isles	20	50	30	N	155	55	0	W
Munich	Europe	Bavaria	48	7	27	N	11	32	30	E
N										
Nagpour	Asia	India	21	8	30	N	79	46	0	E
Namur	Europe	Netherlands	50	28	3	N	4	47	45	E
Nancy	Europe	France	48	41	55	N	6	10	15	E
Naugasachi	Asia	Japan	32	32	0	N	128	46	15	E
Nankin	Asia	China	32	4	40	N	118	47	0	E
Nantes	Europe	France	47	13	7	N	1	33	0	W
Naples	Europe	Italy	40	50	15	N	14	18	0	E
Narcondam	Asia	Bengal Bay	13	25	15	N	94	7	0	E
Narva	Europe	Livonia	59	23	27	N	28	21	45	E
Needles (Light)	Europe	Isle of Wight	50	39	53	N	1	33	55	W
Negapatam	Asia	India	10	46	0	N	79	48	26	E
Negrais (Cape)	Asia	India	15	56	30	N	94	18	0	E
Newbury	America	New England	43	2	0	N	70	37	30	W
New-years's Harbo	America	Staten Land	54	48	55	S	64	11	0	W
Nice	Europe	Italy	43	41	47	N	7	16	22	E
Nicholas Mole (St.)	America	Hispaniola	19	49	20	N	73	29	45	W
Nicobar (Great)	Asia	Bengal Bay	7	4	0	N	93	44	0	E
Ningpo	Asia	China	29	57	45	N	120	18	0	E
Nimes	Europe	France	43	50	12	N	4	18	39	E
Nootka Sound	America	Pacific Ocean	49	36	7	N	126	42	10	W
Norfolk Island	Asia	Pacific Ocean	29	1	45	S	168	10	0	E
North Cape	Europe	Lapland	71	10	30	N	25	49	0	E
North (Cape)	America	South Georgia	54	4	45	S	38	15	0	W
North (Cape)	Asia	Beering's Straits.	68	56	0	N	179	11	30	W
North Island	Asia	Straits of Sunda.	5	37	5	S	105	55	0	E
North Island	Asia	Chinese Sea	25	14	0	N	141	14	0	E
Norton's Sound	America	Beering's Straits.	64	30	30	N	162	47	30	W
Nuremberg	Europe	Germany	49	27	3	N	11	0	45	E
O										
Oaitipeha Bay	America	Otaheite	17	45	45	S	149	8	57	W
Ochotsk	Asia	Tartary	59	20	10	N	143	12	30	E
Ohamaneno Harb.	America	Uliteah	16	45	30	S	151	37	31	W
Oheteroæ (Isle)	America	Pacific Ocean	22	26	36	S	150	48	45	W
Ohevahoa (Isle)	America	Marquesas	9	40	40	S	139	1	40	W
Ohitahoo (Isle)	America	Marquesas	9	55	30	S	139	6	0	W
Oldenburg	Europe	Westphalia	53	8	40	N	8	14	20	E
Oleron (Isle)	Europe	France	46	2	51	N	1	24	27	W
Olinde	America	Brazil	8	13	0	S	35	5	30	W
Oonalaska	America	Beering's Straits.	53	54	29	N	166	22	15	W
Opara (Isle)	America	Pacific Ocean	27	36	0	S	144	8	32	W
Oporto	Europe	Portugal	41	10	0	N	8	22	0	W
Orel	Europe	Russia	52	56	40	N	35	57	0	E
Orenburgh	Asia	Tartary	51	46	3	N	55	7	35	E
Orford (Cape)	America	Pacific Ocean	42	52	0	N	124	25	0	W
Orford-Ness	Europe	England	52	4	30	N	1	28	1	E
Orleans	Europe	France	47	54	10	N	1	54	27	E

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	'	"		°	'	"	
Orleans (New)	America	Lousiana	29	57	45	N	89	58	45	W
Orsk	Asia	Tartary	51	12	32	N	58	32	0	E
Ortegal (Cape)	Europe	Spain	43	46	37	N	7	38	0	W
Osnaburgh (Isle)	America	Pacific Ocean	17	52	20	S	148	6	0	W
Ostend	Europe	Netherlands	51	15	10	N	2	56	30	E
Owhyhee N. Point.	America	Sandwich Isles	20	17	0	N	155	59	0	W
S. Point.	America	Sandwich Isles	18	54	30	N	155	48	0	W
E. Point.	America	Sandwich Isles	19	33	0	N	154	52	0	W
Oxford	Europe	England	51	45	38	N	1	15	0	W
P										
Padua	Europe	Italy	45	23	40	N	11	52	56	E
Paita	America	Peru	5	12	0	S	....			
Palermo	Europe	Sicily	38	6	45	N	13	20	15	E
Paliser (Cape)	Asia	New Zealand	41	38	0	S	175	23	12	E
Paliser (Port)	Africa	Kergulen's La..	49	3	15	S	69	35	0	E
Palma (Isle)	Africa	Canaries	28	36	45	N	17	49	6	W
Palmas (Cape)	Africa	Grain Coast	4	30	0	N	7	41	0	W
Palmerston's Isle	America	Pacific Ocean	18	0	30	S	163	12	0	W
Panama	America	Mexico	8	58	12	N	80	15	15	W
Para	America	R. Amazons	1	28	0	S	48	40	0	W
Paris	Europe	France	48	50	14	N	2	20	0	E
Parma	Europe	Italy	44	44	50	N	10	26	30	E
St. Paul's Isle	Africa	Indian Ocean	38	44	0	S	77	18	0	E
Pavia	Europe	Italy	45	10	59	N	9	11	30	E
Pekin	Asia	China	39	54	47	N	116	24	51	E
Pellew Isles	Asia	Chinese Sea	7	19	0	N	134	40	0	E
Pera (Pulo)	Asia	Strait of Malacca	....				99	8	30	E
St. Petersburgh	Europe	Russia	59	56	23	N	30	19	15	E
St. Peter's Fort	America	Martinico	14	44	0	N	61	21	16	E
St. Peter's Isle	America	Atlantic Ocean	46	46	30	N	56	17	0	W
St. Peter and Paul	Asia	Kamtschatka	53	0	37	N	158	44	30	E
Philadelphia	America	Pennsylvania	39	56	54	N	75	13	45	W
St. Phillip's Fort	Europe	Minorca	39	50	46	N	3	48	30	E
Phillips's Island	America	Pacific Ocean	16	15	0	S	143	56	0	W
Pickersgill's Harb.	Asia	New Zealand	45	47	27	S	166	18	9	E
Pico	Europe	Azores	38	26	52	N	28	27	40	W
Pines (Isle of)	Asia	New Caledonia	22	38	0	S	167	38	0	E
Pisa	Europe	Italy	43	43	7	N	10	22	52	E
Plymouth	Europe	England	50	22	30	N	4	12	45	W
Poitiers	Europe	France	46	34	50	N	0	20	48	E
Pondicherry	Asia	India	11	55	41	N	79	51	30	E
Pool	Europe	England	50	42	50	N	1	58	55	W
Port au Prince	America	Hispaniola	18	33	42	N	72	27	33	W
Portland (Point)	Europe	England	50	31	0	N	2	29	0	W
Porto Bello	America	Mexico	9	33	30	N	79	44	15	W
Porto Praya	Africa	St. Jago	14	53	30	N	23	30	17	W
Porto Rica N.E. P.	America	West Indies	18	29	0	N	65	51	25	W
N.W.P.	America	West Indies	18	31	30	N	67	18	0	W
Porto Sancto (Isle)	Africa	Atlantic Ocean	33	5	35	N	16	14	51	W
Port Paix	America	Hispaniola	19	56	30	N	72	58	0	W

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Port Praslin	Asia	New Britain	4	49	27	S	153	6	30	E
Port Royal	America	Jamaica	18	0	0	N	76	44	45	W
Port Royal	America	Martinico	14	35	55	N	61	9	0	W
Portsmouth	Europe	England	50	47	27	N	1	5	57	W
Portsmouth	America	New England	43	40	15	N	70	43	15	W
Posen	Europe	Poland	52	26	0	N	15	0	15	E
Prague	Europe	Bohemia	50	53	4	N	14	25	15	E
Presburg	Europe	Hungary	48	8	7	N	17	10	30	E
Prince's Island	Asia	Straits of Sunda.	6	35	10	S	105	14	20	E
Prince's Island	Africa	Atlantic Ocean	1	37	0	N	7	40	0	E
P. W. Henry's Isle	America	Pacific Ocean	19	0	0	N	141	22	0	W
Providence	America	New England	41	50	41	N	71	22	0	W
		Q								
Quebec	America	Canada	46	48	38	N	71	5	29	W
Quimper	Europe	France	47	58	29	N	4	6	0	W
Quito	America	Peru	0	13	27	S	78	10	15	W
		R								
Race (Cape)	America	Newfoundland	46	40	0	N	53	3	30	W
Rakah (Ancient)	Asia	Mesopotamia	36	1	0	N	38	50	0	E
Ramhead	Europe	England	50	18	24	N	4	17	30	W
Ramsgate	Europe	England	51	19	31	N	1	24	41	E
Ranai (Isle)	America	Sandwich Isles	20	46	30	N	156	55	30	W
Ratisbon	Europe	Germany	49	0	0	N	12	6	25	E
Ravenna	Europe	Italy	44	25	5	N	12	10	36	E
Rennes	Europe	France	48	6	50	N	1	41	30	W
Resolution (Isle)	America	Pacific Ocean	17	23	30	S	141	45	0	W
Revel	Europe	Livonia	52	29	22	N	24	39	15	E
Rheims	Europe	France	49	15	16	N	4	1	48	E
Riche (Point)	America	Newfoundland	50	40	10	N	57	23	0	W
Riga	Europe	Livonia	56	56	24	N	24	0	15	E
Rio Janeiro	America	Brasil	22	54	10	N	43	10	45	W
Rochelle	Europe	France	46	9	33	N	1	9	2	W
Rochfort	Europe	France	45	56	10	N	0	57	49	W
Rodrigues (Isle)	Africa	Indian Ocean	19	40	40	S	63	9	15	E
Rome	Europe	Italy	41	53	54	N	12	27	41	E
Romney	Europe	England	50	59	7	N	0	56	22	E
Rotterdam (Isle)	Europe	Holland	51	56	0	N	4	29	0	E
Rotterdam	Asia	Friendly Isles	20	15	22	S	174	44	48	E
Rouen	Europe	France	49	26	27	N	1	5	30	E
		S								
Saba (Isle)	America	Carib. Sea	17	39	30	N	63	17	15	W
Sable (Cape)	America	Nova Scotia	43	23	43	N	65	39	15	W
Salatan (Point)	Asia	Borneo	4	13	45	S	114	29	0	E
Salee	Africa	Morocco	34	5	0	N	6	43	30	W
Salisbury	Europe	England	51	3	49	N	1	47	0	W
Salisbury (Isle)	America	Hudson's Bay	63	29	0	N	76	47	0	W
Salvages (Isles)	Africa	Atlantic Ocean	30	3	27	N	16	6	30	W
Sancta Cruz	Africa	Teneriffe	28	29	4	N	16	22	30	W
Sancta Cruz	Africa	Grand Canary	28	10	37	N	15	47	0	W
Sandsoe	Europe	Lapland	68	56	15	N	16	57	0	E

Places.	*Conti- nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°	′	″		°	′	″	
Sandwich	Europe	England	51	16	30	N	1	20	15	E
Sandwich Bay	America	South Georgia	54	42	0	S	36	12	0	W
Sandwich (Cape)	Asia	New Holland	18	17	11	S	146	1	13	E
Sandwich Isle	Asia	New Hebrides	17	41	0	S	168	33	0	E
Sandy Bay	America	Nova Scotia	43	31	9	S	65	39	15	W
Sandy Cape	Asia	New Holland	24	45	48	S	153	12	22	E
Sandy Hook	America	New Jersey	44	26	30	N	74	6	42	W
Saratow	Europe	Russia	51	31	28	N	46	0	0	E
Saunder's (Cape)	Asia	New Zealand	45	57	45	S	170	16	0	E
———'s Isle	America	Sandwich Land	58	0	0	S	26	58	0	W
Savage Isle	Asia	Pacific Ocean	19	2	15	S	169	30	30	W
Savanna	America	Georgia	32	0	45	N	80	56	0	W
Scilly Islands	Europe	St.George'sChan	49	53	47	N	6	29	30	W
Sebastian (Cape St.)	Africa	Madagascar	12	30	0	S	46	25	0	E
Sedan	Europe	France	49	42	29	N	4	57	36	E
Selsea	Europe	England	50	43	50	N	0	47	54	W
Senegal	Africa	Negroland	15	53	0	N	16	31	30	W
Seringapatam	Asia	Mysore	12	31	45	N	76	46	45	E
Severndroog	Asia	India	17	47	30	N	73	9	0	E
Sevastopolis	Europe	Crimea	44	41	30	N	33	35	0	E
Shoreham	Europe	England	50	50	7	N	0	16	19	W
Siam	Asia	India	14	18	0	N	100	50	0	E
Sidney Cove	Asia	Port Jackson	33	51	7	S	151	13	30	E
Sierra Leone	Africa	Sierra Leone	8	29	30	N	13	9	17	W
Skagen (Lights)	Europe	Denmark	57	43	44	N	10	37	45	E
Sluys	Europe	Holland	51	18	35	N	3	22	54	E
Smeinogorsk	Asia	Siberia	51	9	27	N	82	8	0	E
Smokey Cape	Asia	New Holland	30	54	18	S	153	1	40	E
Smyrna	Asia	Natolia	38	28	7	N	27	6	33	E
Snœfell (Mount)	Europe	Iceland	64	52	20	N	23	54	0	W
Socono (Isle)	America	Pacific Ocean	18	48	0	N	110	10	0	W
Sonderburg	Europe	Denmark	54	54	59	N	9	48	10	E
Soolo	Asia	Philippines	5	57	0	N	121	15	30	W
Southampton	Europe	England	50	54	0	N	1	23	56	E
South Cape	Asia	New Zealand	47	16	50	S	167	20	9	E
South Cape	Asia	New Holland	43	42	30	S	146	58	0	E
South Island	Asia	Chinese Sea	24	22	30	N	141	24	0	E
Spartal (Cape)	Africa	Morocco	35	46	0	N	5	57	12	W
Startpoint	Europe	England	50	14	20	N	3	44	30	W
Stephen's (Isle)	Asia	Cook's Straits	40	35	26	S	174	0	22	E
Stephen's (Port)	Asia	New Holland	32	45	0	S	152	12	0	E
Stockholm	Europe	Sweden	59	20	31	N	18	3	51	E
Strabane	Europe	Ireland	54	49	29	N	7	23	5	W
Stratsburg	Europe	France	48	34	56	N	7	44	36	E
Straumness	Europe	Iceland	65	39	40	N	24	29	15	W
Stromness	Europe	Orkneys	58	56	22	N	3	31	15	W
Success (Cape)	America	Terra del Fuego	55	1	0	S	65	27	0	W
Suez	Africa	Egypt	30	2	0	N	32	28	30	E
Surat	Asia	India	21	11	0	N	73	2	34	E
Swilly Island	Asia	New Holland	43	55	30	S	147	7	30	E

T

Places.	Continent.	Coast, Sea, or Country.	Latitude.				Longitude in Degrees.			
				′	″		°		″	
Table Cape	Asia	New Zealand ..	39	6	40	S	178	2	20	E
Table Island ..	Asia	New Hebrides ..	15	38	0	S	167	7	0	E
Tackararee Point ..	Africa	Gold Coast ..	4	46	53	N	2	27	44	W
Taganrok	Asia	Tartary ..	47	12	40	N	38	38	45	E
Tambou	Europe	Russia	52	43	44	N	41	45	0	E
Tanjore	Asia	India	10	46	30	N	79	48	26	E
Tasman's Head ..	Asia	New Holland ..	43	33	30	S	147	30	30	E
Tellicherry	Asia	Malabar Coast ..	11	45	20	N	75	29	3	E
Teneriffe (Peak) ..	Africa	Canaries ..	28	15	38	N	16	45	33	W
Tercera	Europe	Azores	38	39	7	N	27	12	42	W
St. Thadæus.. ..	Asia	Kamtschatka ..	62	50	0	N	179	5	0	E
St. Thomas's Isle ..	America	Virgin Isles ..	18	21	55	N	64	51	30	W
St. Thomas's Isle ..	Africa	Atlantic Ocean..	0	19	0	N	6	42	30	E
Three Points (Cape) .	Africa	Gold Coast ..	4	40	30	N	2	43	32	W
Thrumb Cap.. ..	America	Pacific Ocean ..	18	36	41	S	139	13	45	W
Thule (Southern) ..	America	Sandwich Land .	59	34	0	S	27	45	0	W
Tiburon (Cape) ..	America	Hispaniola ..	18	19	25	N	74	34	12	W
Timor-Land	Asia	India	8	3	0	S	132	17	0	E
Timan (Isle).. ..	Asia	Pacific Ocean ..	15	0	0	N	145	55	30	E
Tobolsk	Asia	Siberia	58	12	18	N	68	18	30	E
Tolago Bay	Asia	New Zealand ..	38	22	0	S	178	35	54	E
Toledo	Europe	Spain	39	50	0	N	3	20	0	W
Tomsk	Asia	Siberia	56	29	58	N	84	58	30	E
Tornea	Europe	Sweden ..	65	50	50	N	24	14	0	E
Toulon	Europe	France	43	7	16	N	5	55	26	E
Toulouse	Europe	France	43	35	46	N	1	26	45	E
Tournar .. .	Europe	Netherlands ..	50	36	57	N	3	33	17	E
Tours	Europe	France	47	23	46	N	0	41	32	E
Trafalgar	Europe	Spain	36	7	56	N	6	3	0	W
Tranquebar	Asia	India	10	56	0	N	79	40	30	E
Treves	Europe	Germany ..	49	46	37	N	6	38	5	E
Trinidada (Isle) ..	America	Atlantic Ocean..	20	30	30	S	29	33	0	W
Trinity Island ..	America	Pacific Ocean ..	56	35	0	N	154	53	0	W
Trincomaly	Asia	Ceylon	8	32	0	N	81	12	0	E
Tripoli	Africa	Barbary ..	32	53	40	N	13	21	7	E
Troyes	Europe	France .. .	48	18	5	N	4	4	30	E
Tubingen	Europe	Germany ..	48	31	4	N	9	2	29	E
Turin	Europe	Italy	45	4	14	N	7	40	0	E
Turk's Isles	America	Windw. Passage.	21	11	0	N	71	15	22	E
Turtle Island ..	Asia	Pacific Ocean ..	19	48	45	S	177	57	0	W
Typa	Asia	China	22	9	20	N	113	43	45	E

U

Places.	Continent.	Coast, Sea, or Country.	Latitude.				Longitude in Degrees.			
Ubes (St.)	Europe	Portugal ..	38	22	15	N	8	54	22	W
Ufa	Europe	Russia	54	42	45	N	55	53	30	E
Uliateah	America	Pacific Ocean ..	16	45	0	S	151	31	0	W
Ulm	Europe	Germany ..	48	23	45	N	9	58	51	E
Umba	Europe	Lapland ..	66	39	48	N	34	14	45	E
Unst	Europe	Shetland ..	60	44	0	N	0	46	0	W

Places.	*Conti-nent.*	*Coast, Sea, or Country.*	*Latitude.*				*Longitude in Degrees.*			
			°		″		°	′	″	
Upsal	Europe	Sweden	59	51	50	N	17	38	9	E
Uralsk	Asia	Tartary	51	11	0	N	51	35	15	E
Uraniberg	Europe	Denmark	55	54	17	N	12	53	0	E
Ushant Lights	Europe	France	48	28	8	N	5	3	21	W
Utretch	Europe	Holland	52	5	0	N	5	9	45	E
V										
Valence	Europe	France	44	55	59	N	4	53	10	E
Valenciennes	Europe	France	50	21	27	N	3	31	40	E
Valparaiso	America	Chili	33	1	29	S	72	19	15	W
Van Diemen's Road	Asia	Tonga-Tabu	21	4	15	S	175	6	0	W
Vannes	Europe	France	47	39	26	N	2	45	19	W
Venice	Europe	Italy	45	27	4	N	12	3	15	E
Venus (Point)	America	Otaheite	17	29	15	S	149	30	22	W
Vera Cruz	America	Mexico	19	9	36	N	95	3	0	W
Verd (Cape)	Africa	Negroland	14	47	13	N	17	33	16	W
Verdun	Europe	France	49	9	24	N	5	22	41	E
Verona	Europe	Italy	45	26	26	N	11	1	0	E
Versailles	Europe	France	48	48	21	N	2	7	7	E
Vienna	Europe	Germany	48	12	36	N	16	21	54	E
Vigo	Europe	Spain	42	13	20	N	8	27	45	W
St. Vincent's (Cape)	Europe	Portugal	37	1	0	N	9	2	22	W
St. Vincent's (Isle)	America	Carib. Sea	13	10	15	N	61	30	51	W
Virgin (Cape)	America	Patagonia	52	23	0	S	67	54	0	W
Visagapatam	Asia	India	17	42	0	N	83	23	52	E
W										
Wakefield	Europe	England	53	41	0	N	1	35	0	W
Wales (P. of) Isles	America	Pacific Ocean	14	58	0	S	147	48	0	W
Wallingford	Europe	England	51	36	2,4		1	6	59,8	W
Walmer	Europe	England	51	15	29,0		1	23	8,0	E
Warwick	Europe	England	52	16	53,0		1	34	54,3	W
Wendover	Europe	England	51	45	6,4		0	46	1,4	W
West Tarring	Europe	England	50	49	29,8		0	23	35,0	W
Wickham	Europe	England	51	17	5,0		1	10	48,0	E
Winchelsea	Europe	England	50	55	28,0		0	42	31,0	E
Windsor	Europe	England	51	29	0,0		0	35	28,0	W
Witney	Europe	England	51	46	49,9		1	28	42,9	W
Woburn	Europe	England	51	59	27,8		0	36	58,5	W
Woodstock	Europe	England	51	50	47,4		1	21	0,5	W
Wrotham	Europe	England	51	18	54,0		0	18	47,0	E

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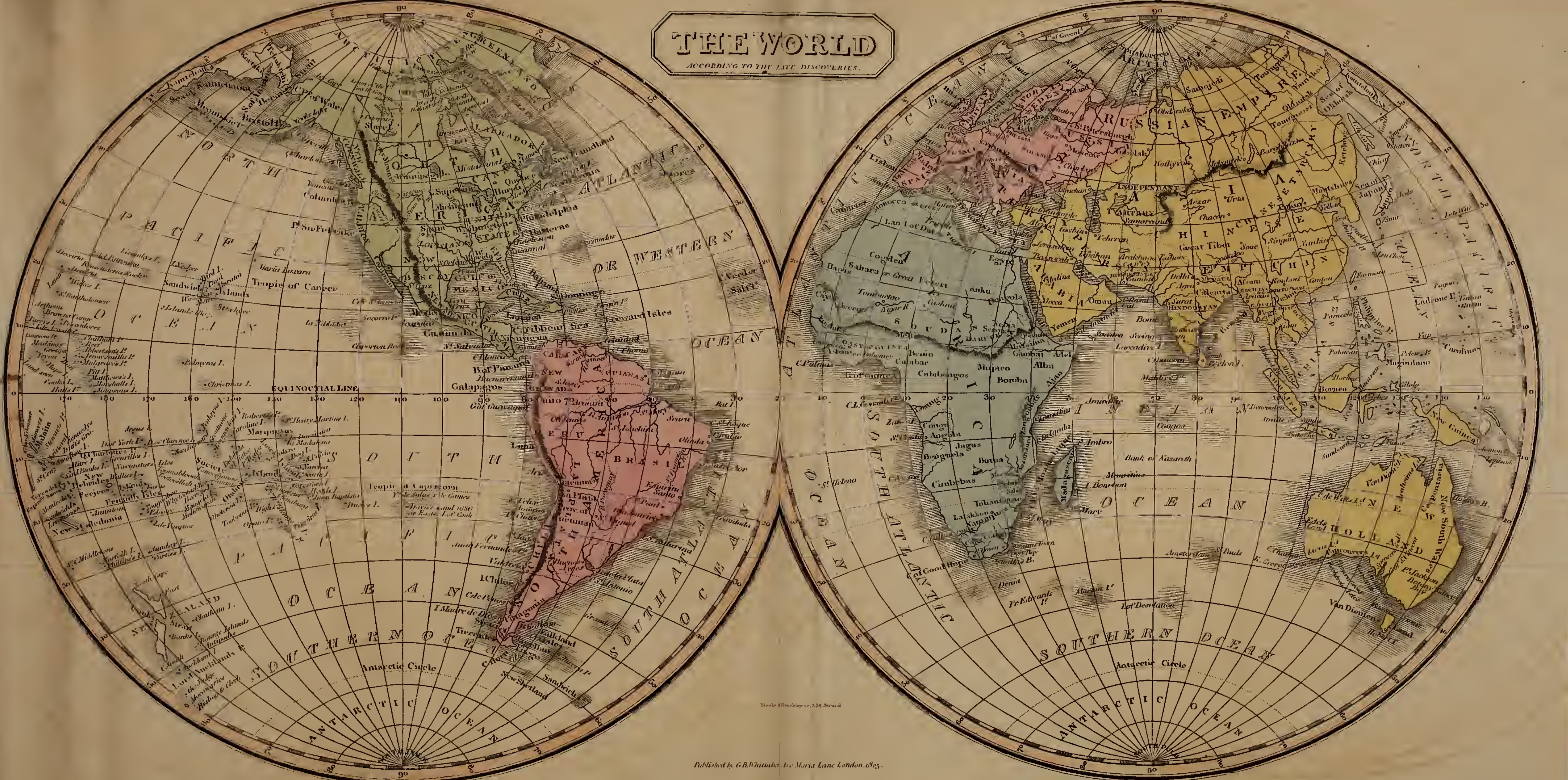

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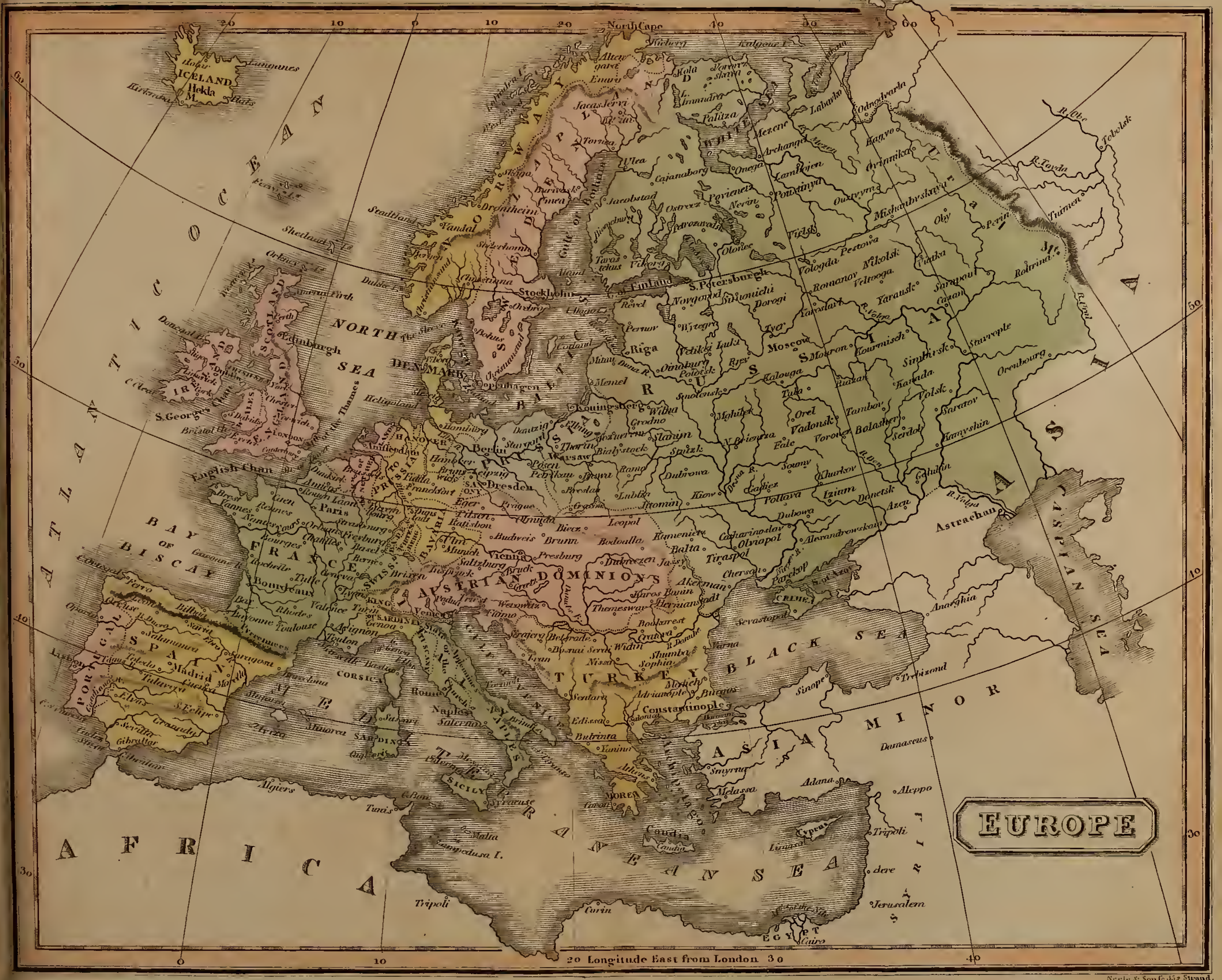

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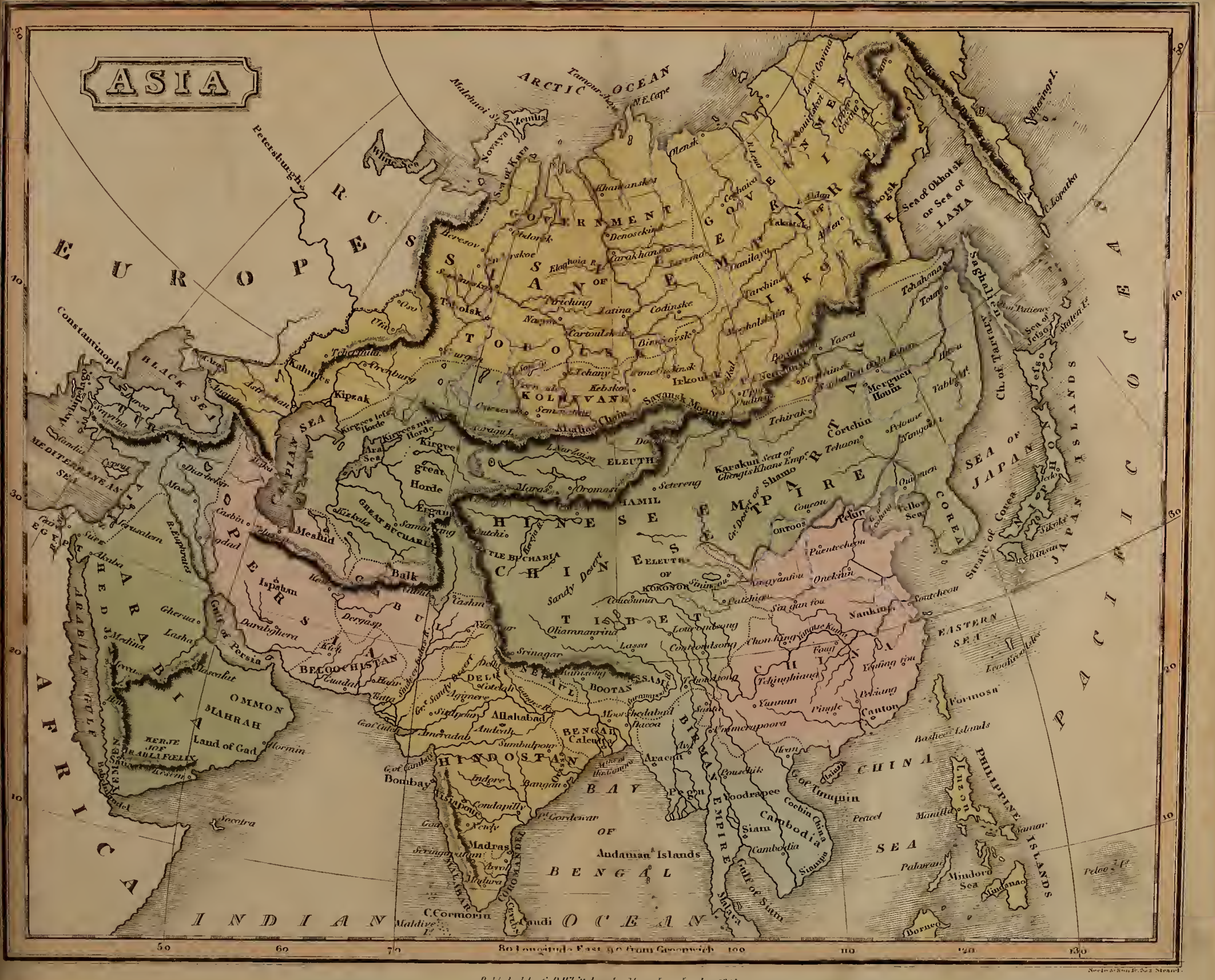

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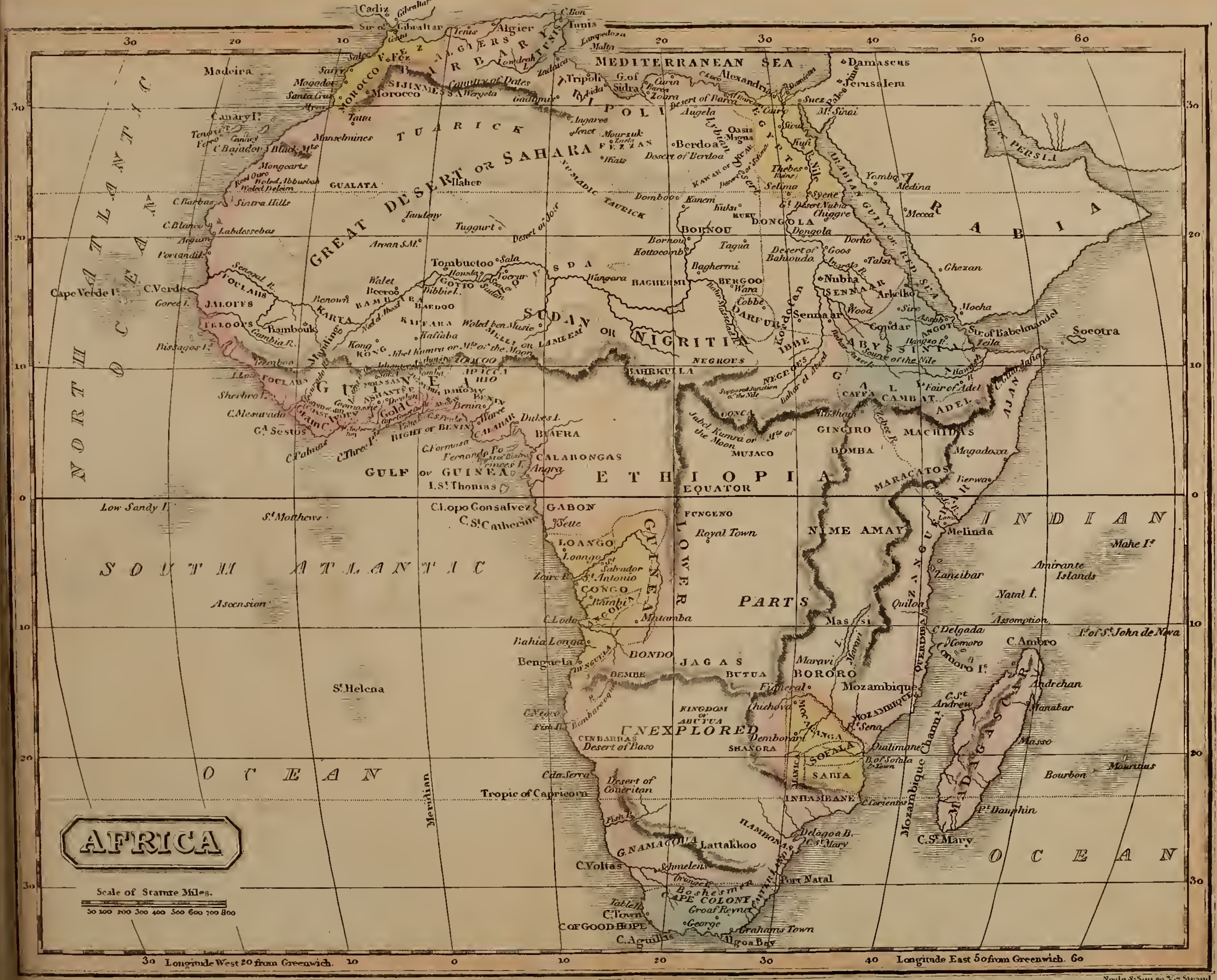

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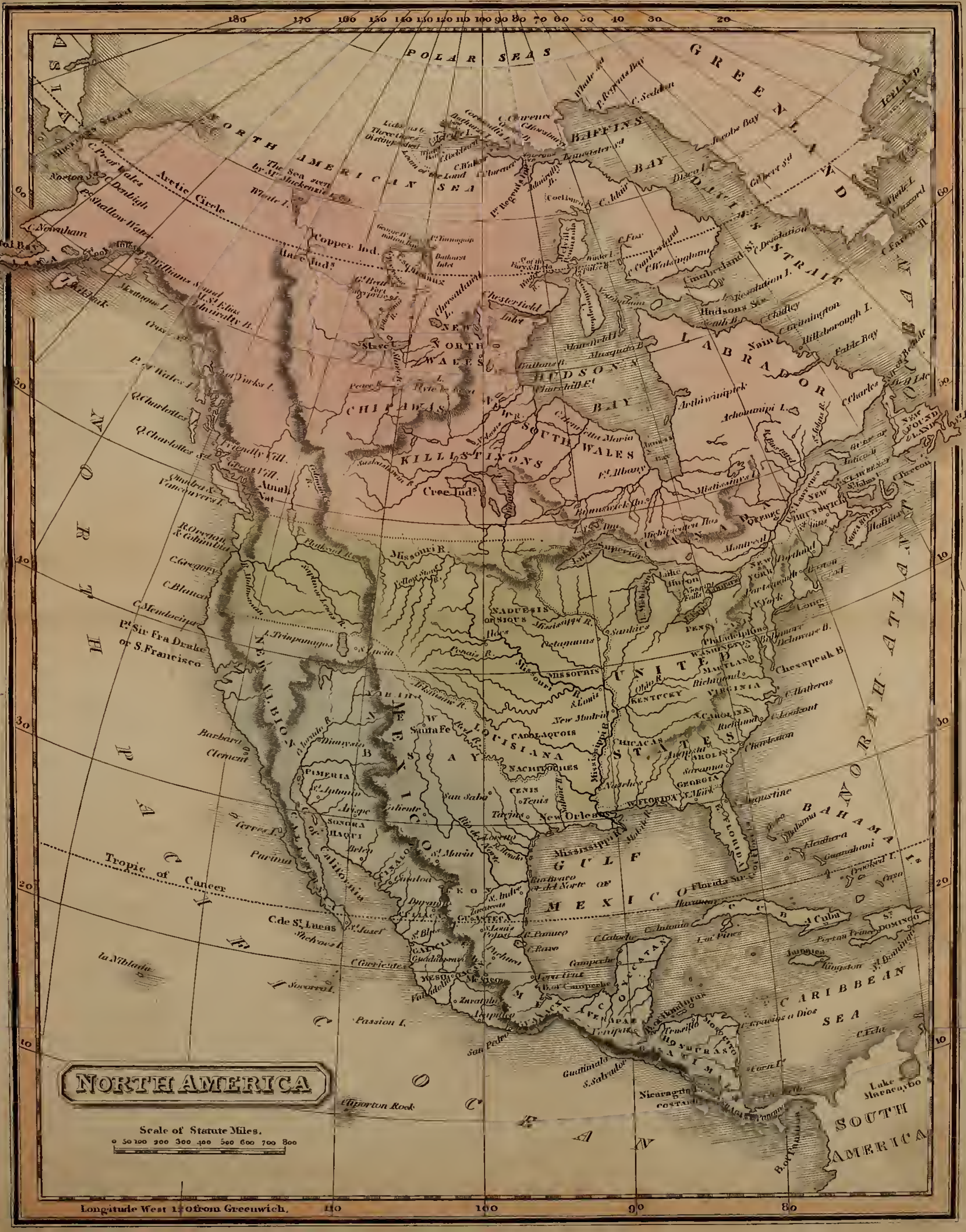

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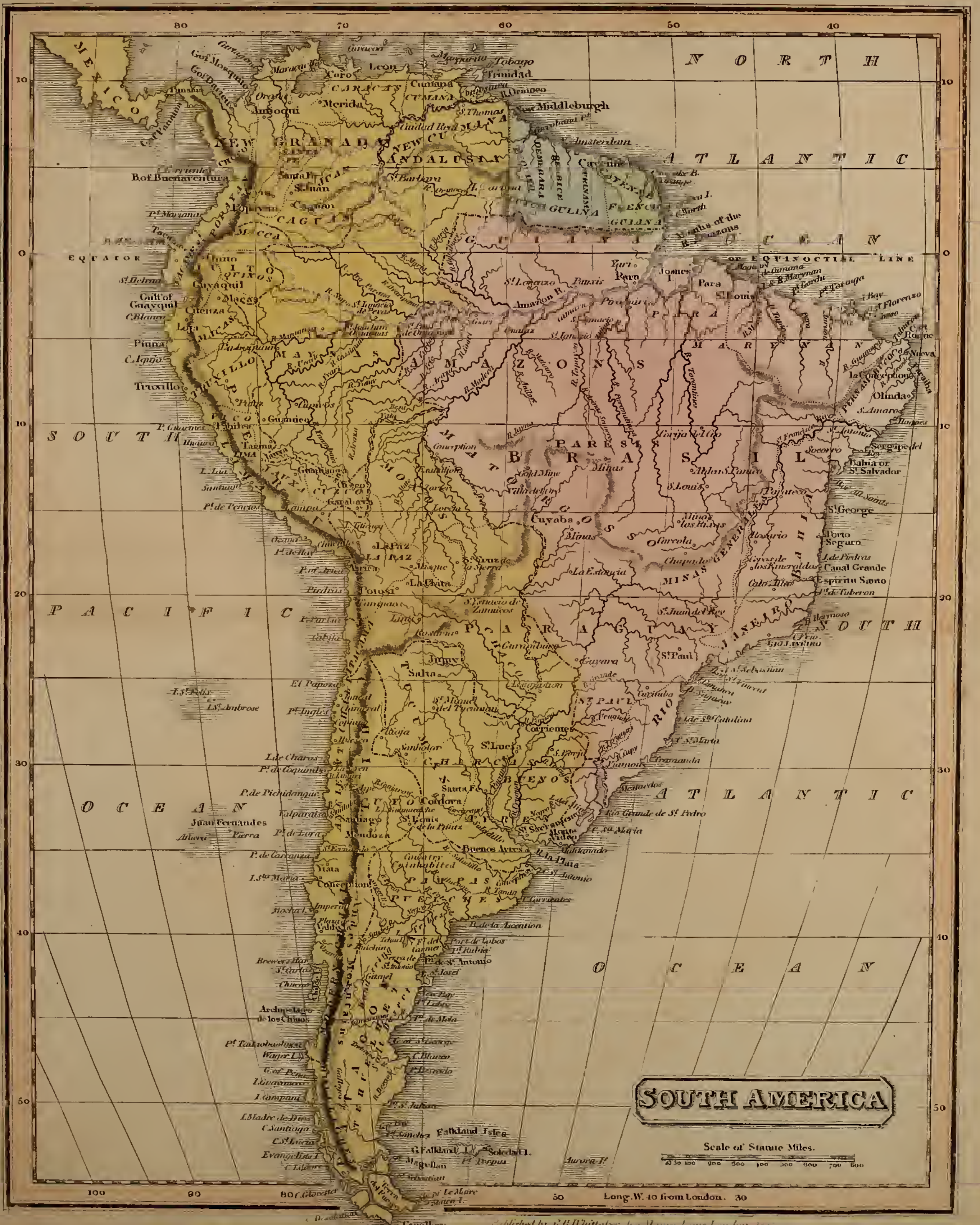

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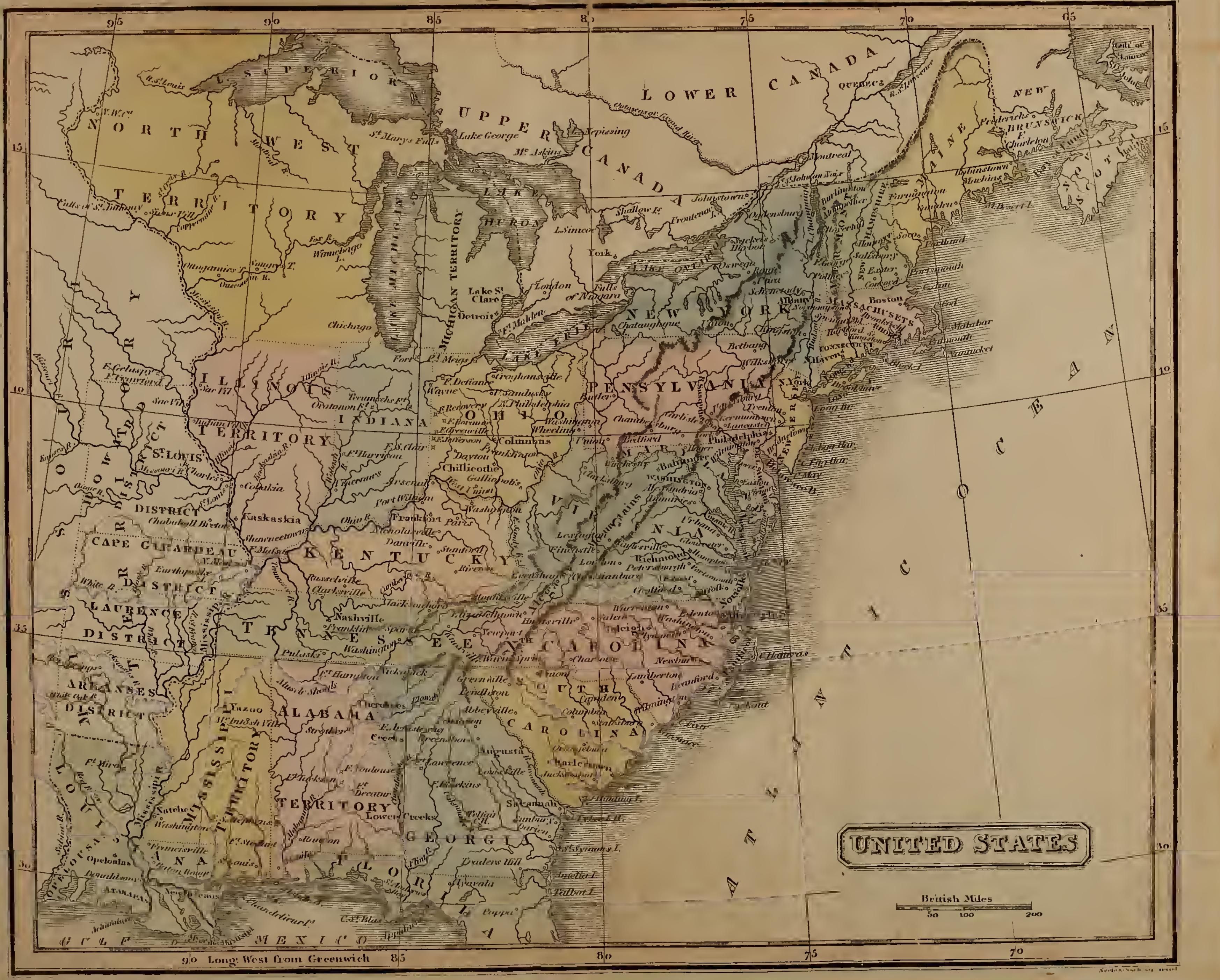

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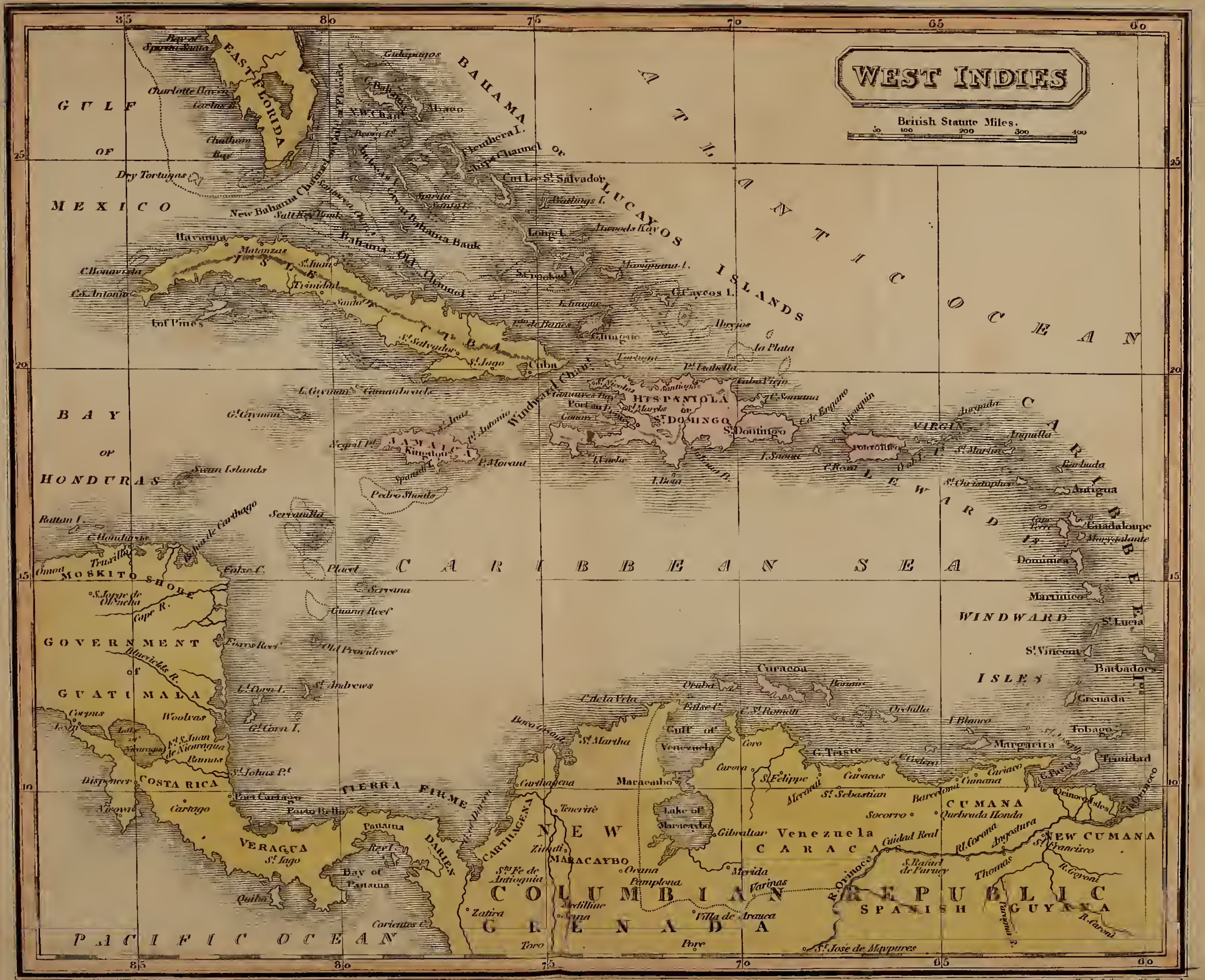

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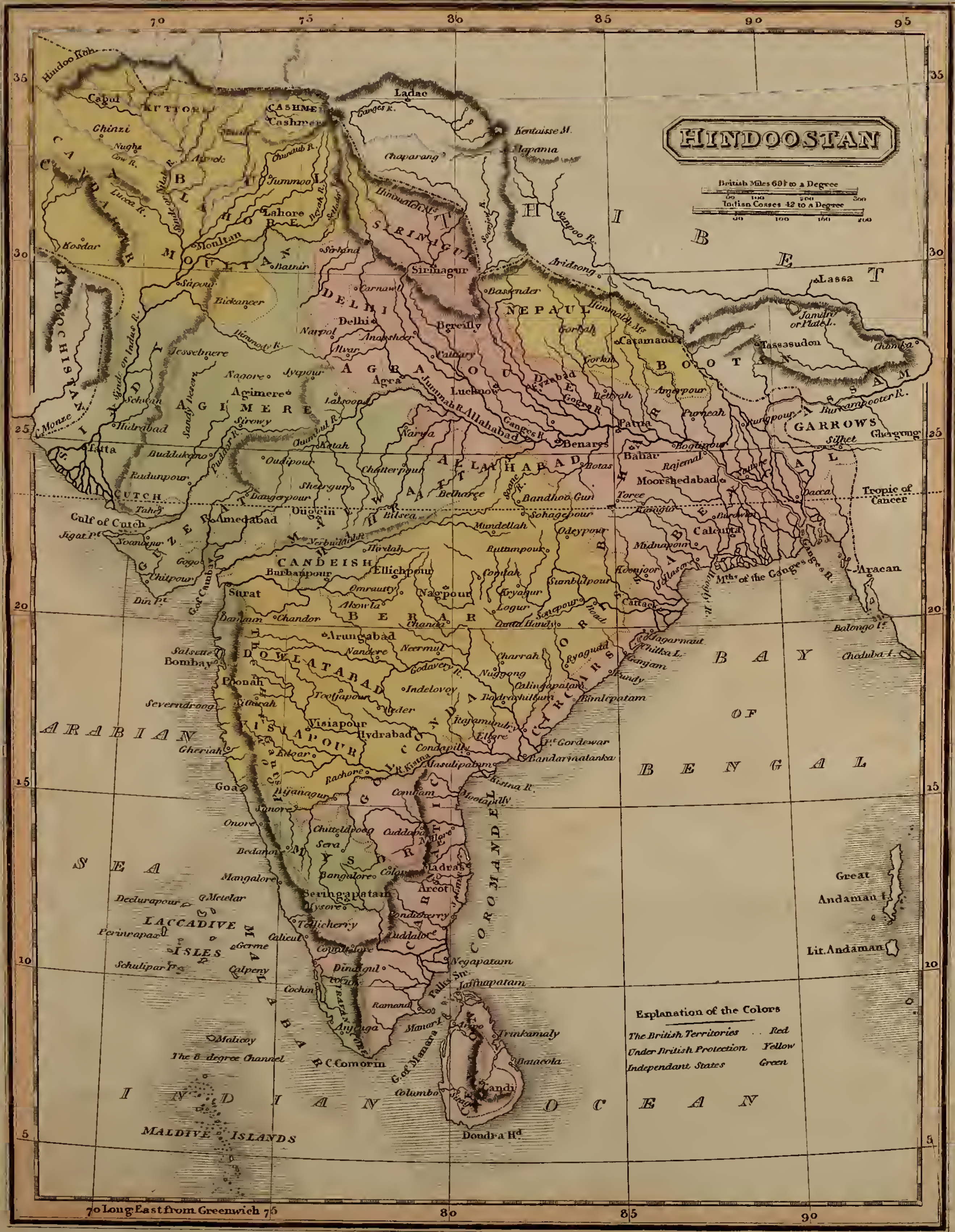

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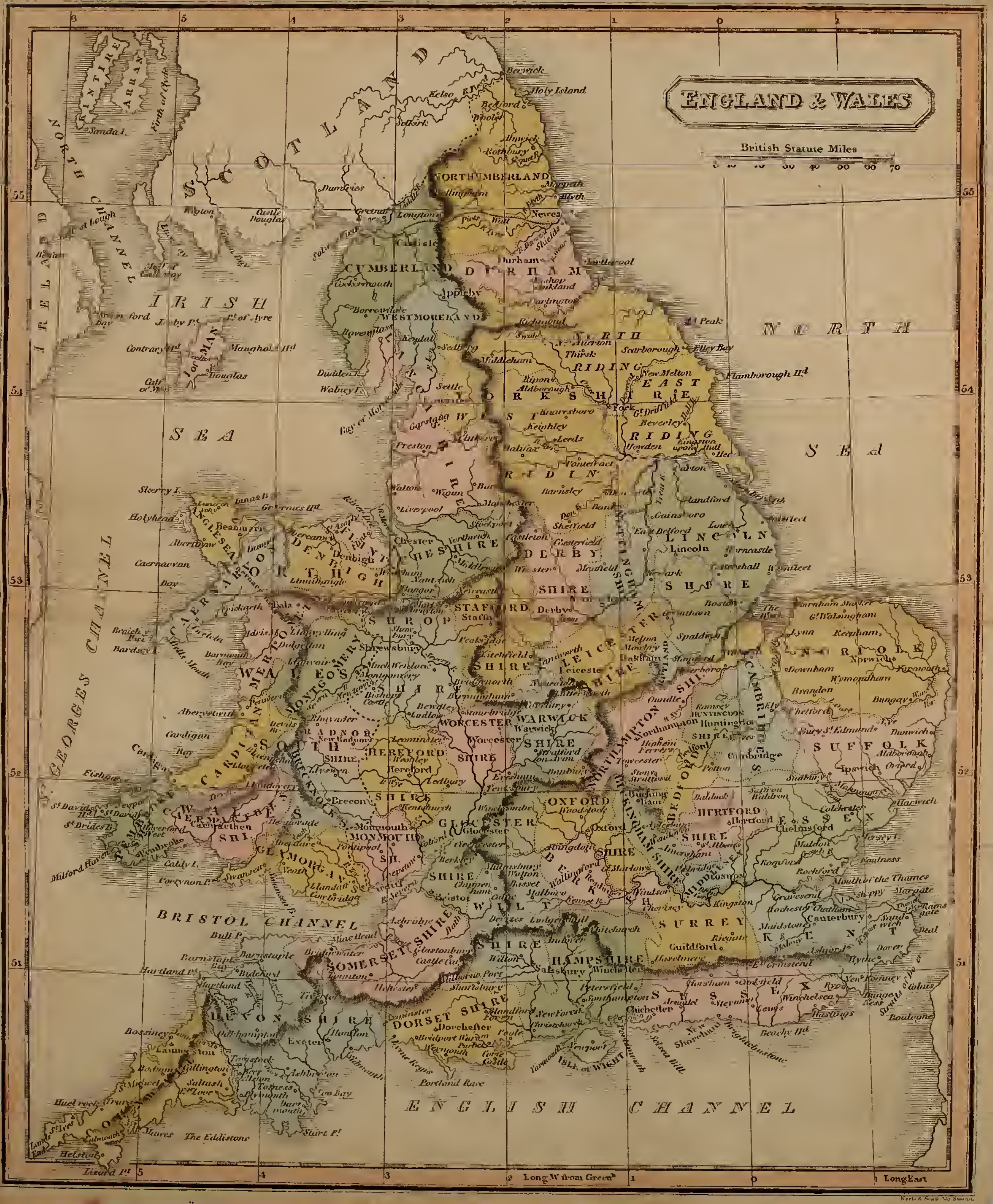

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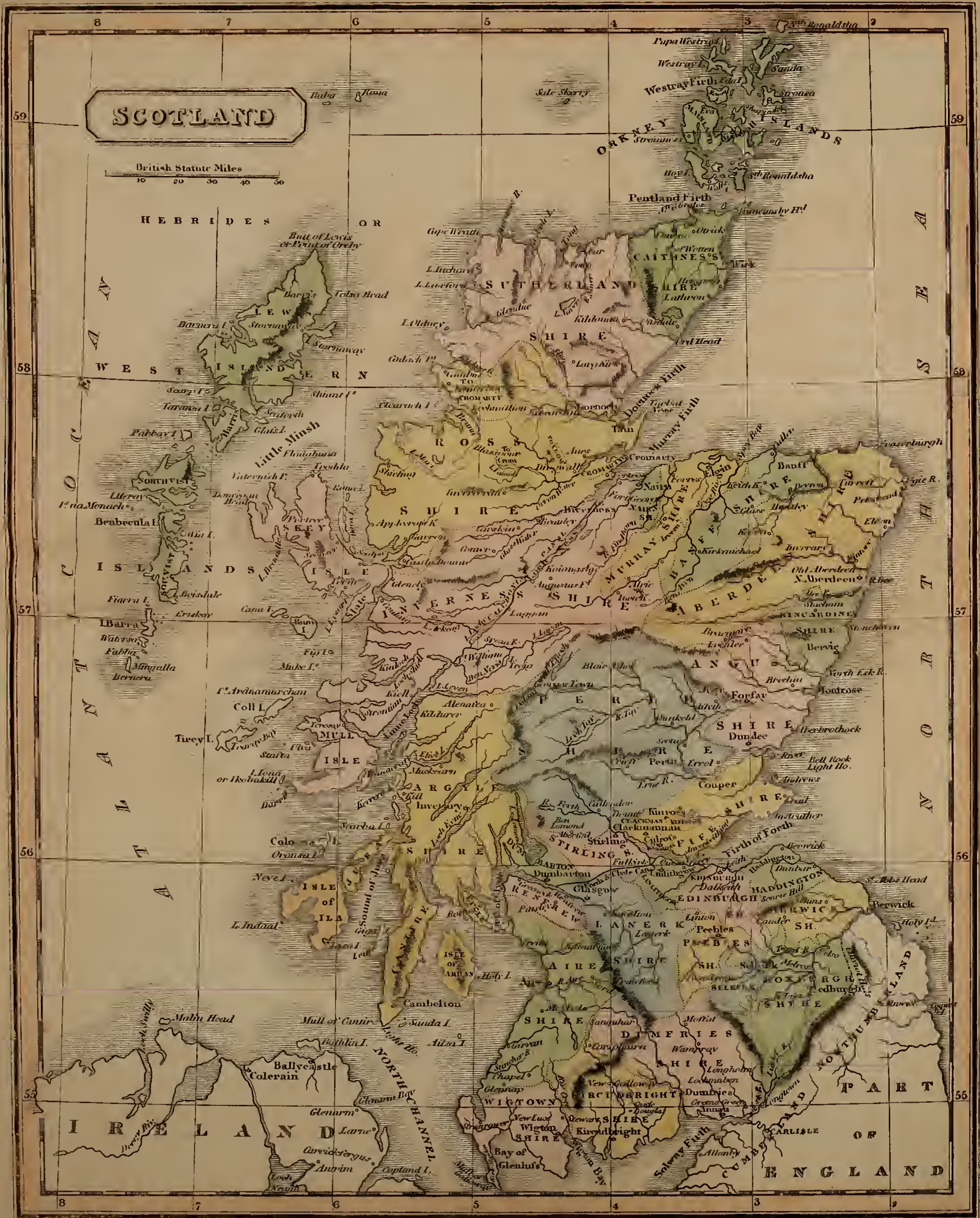

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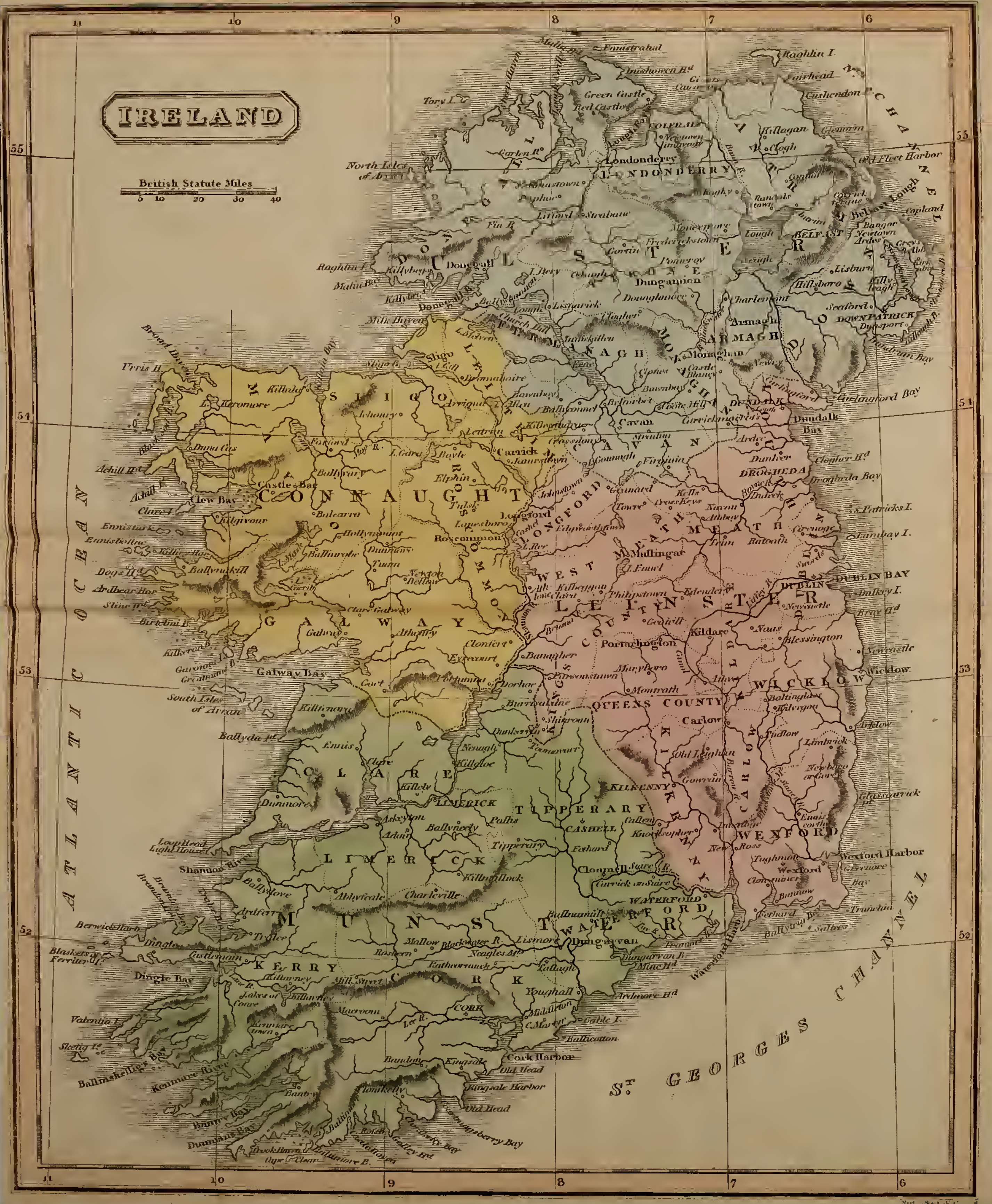

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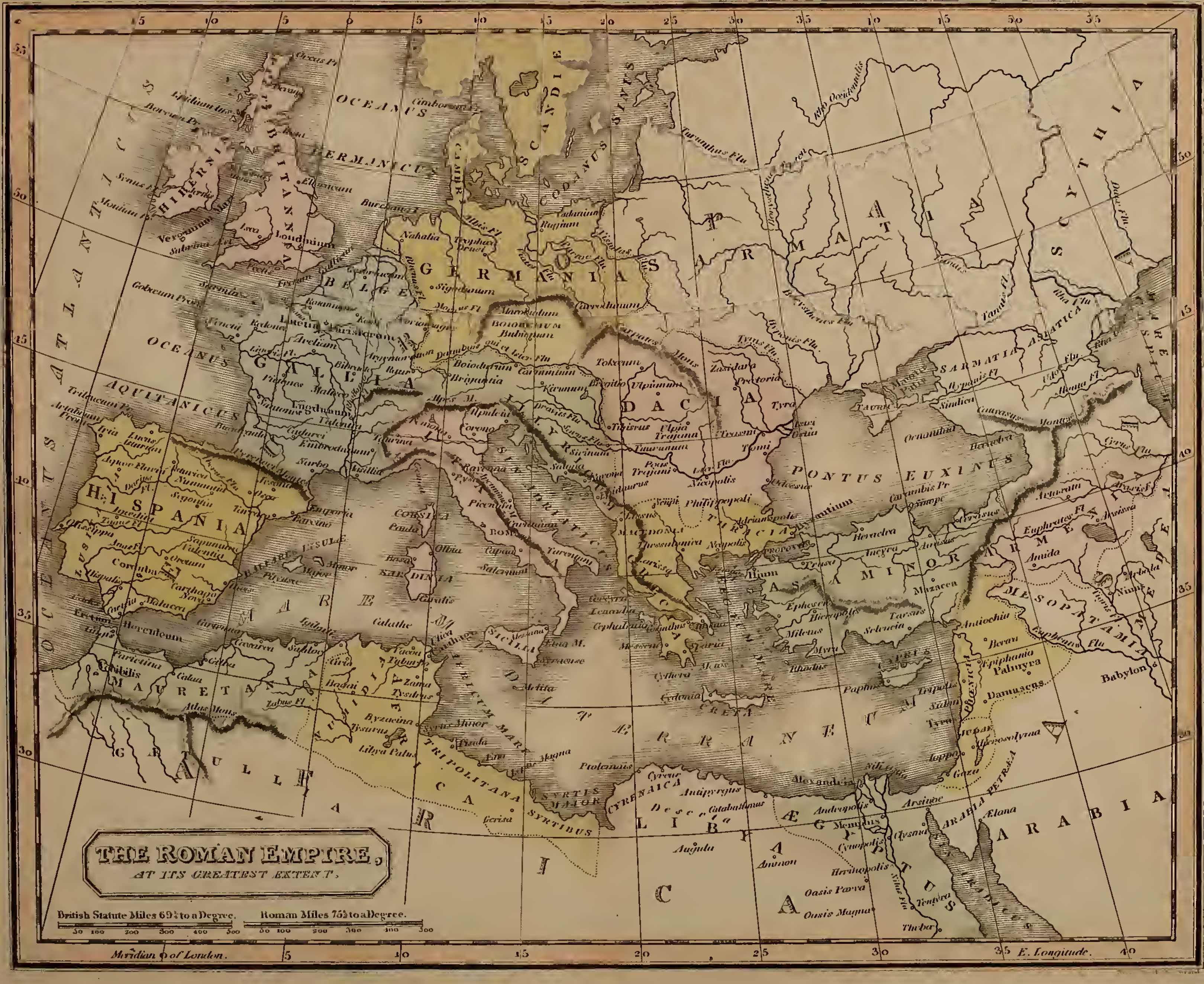

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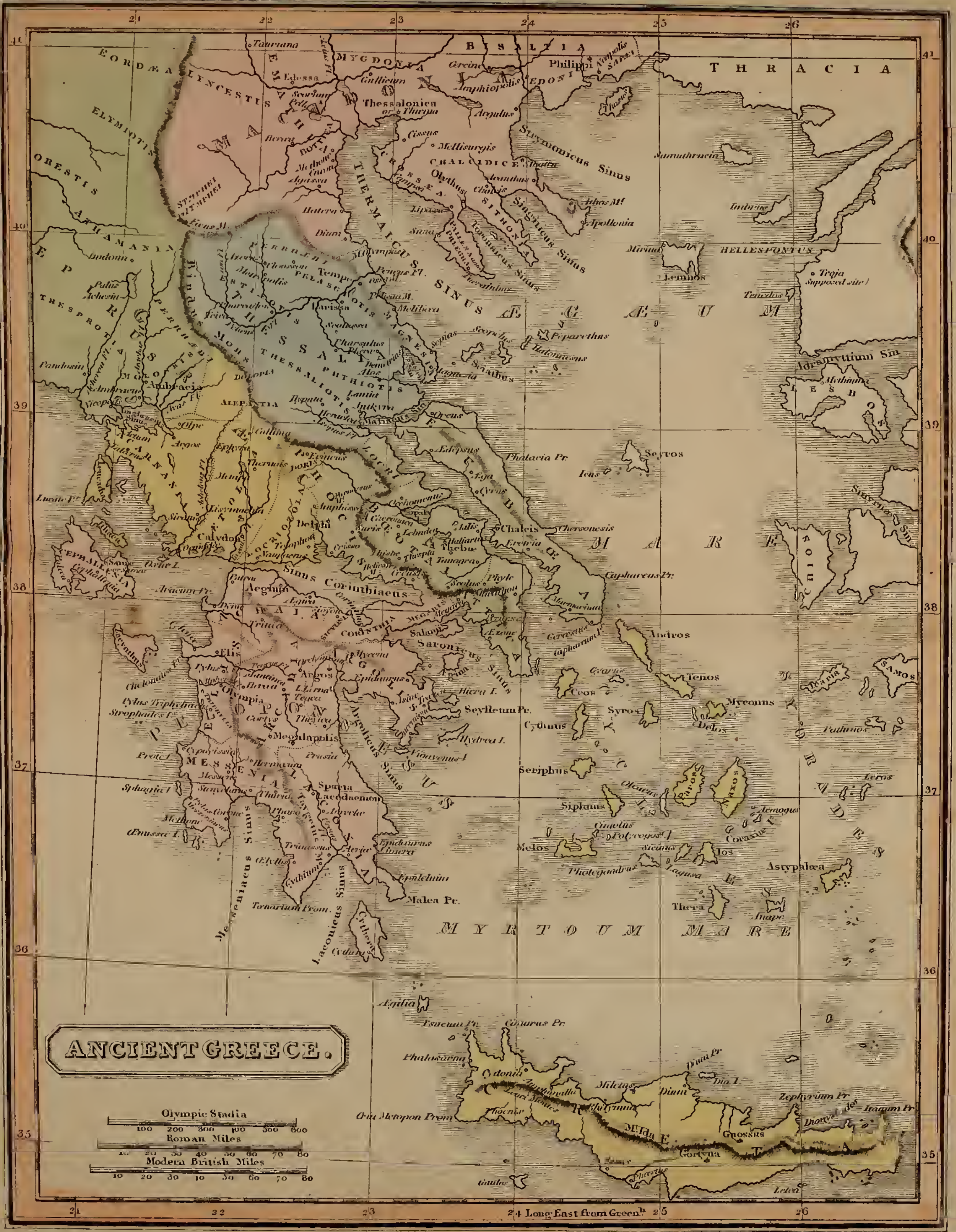

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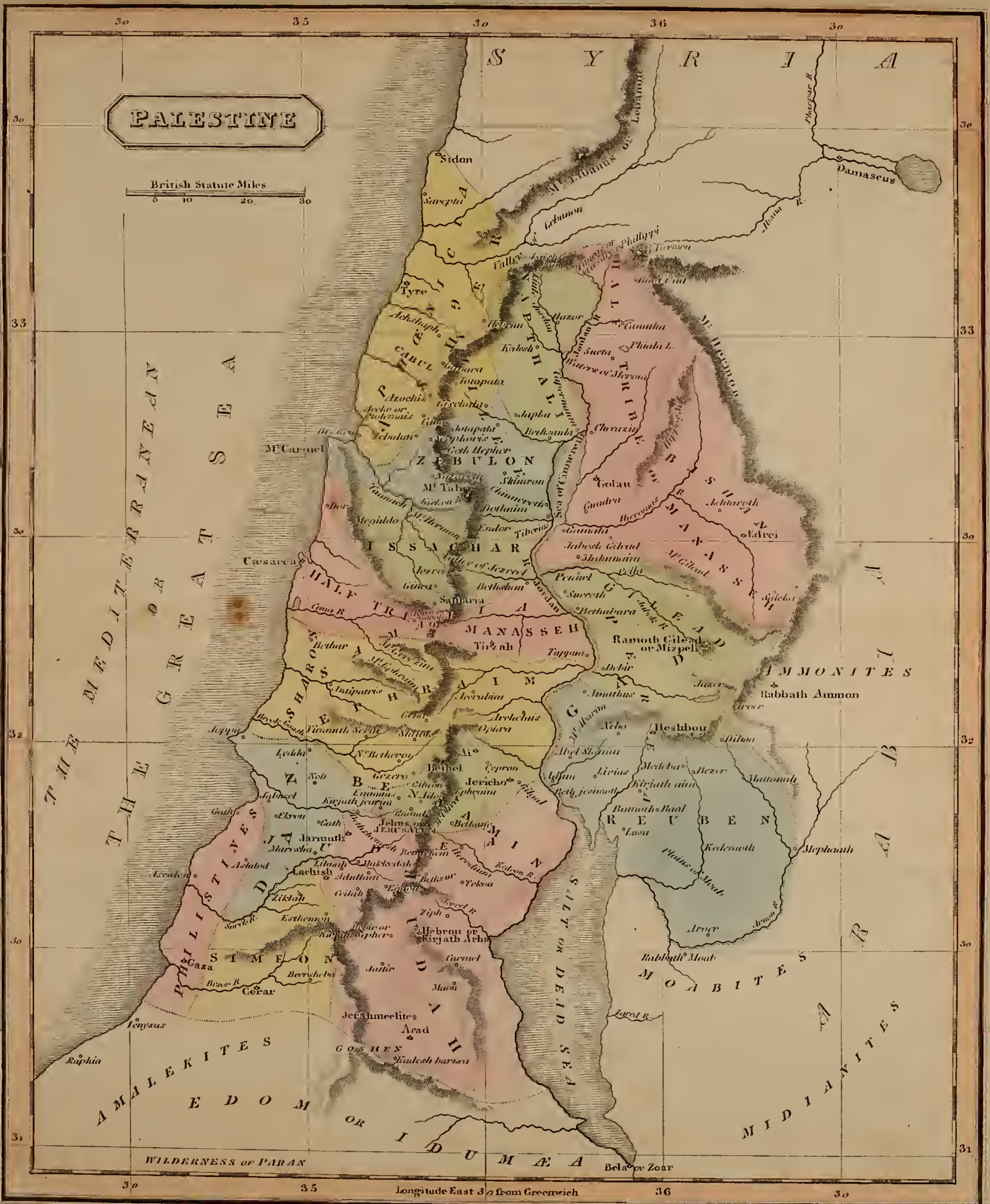

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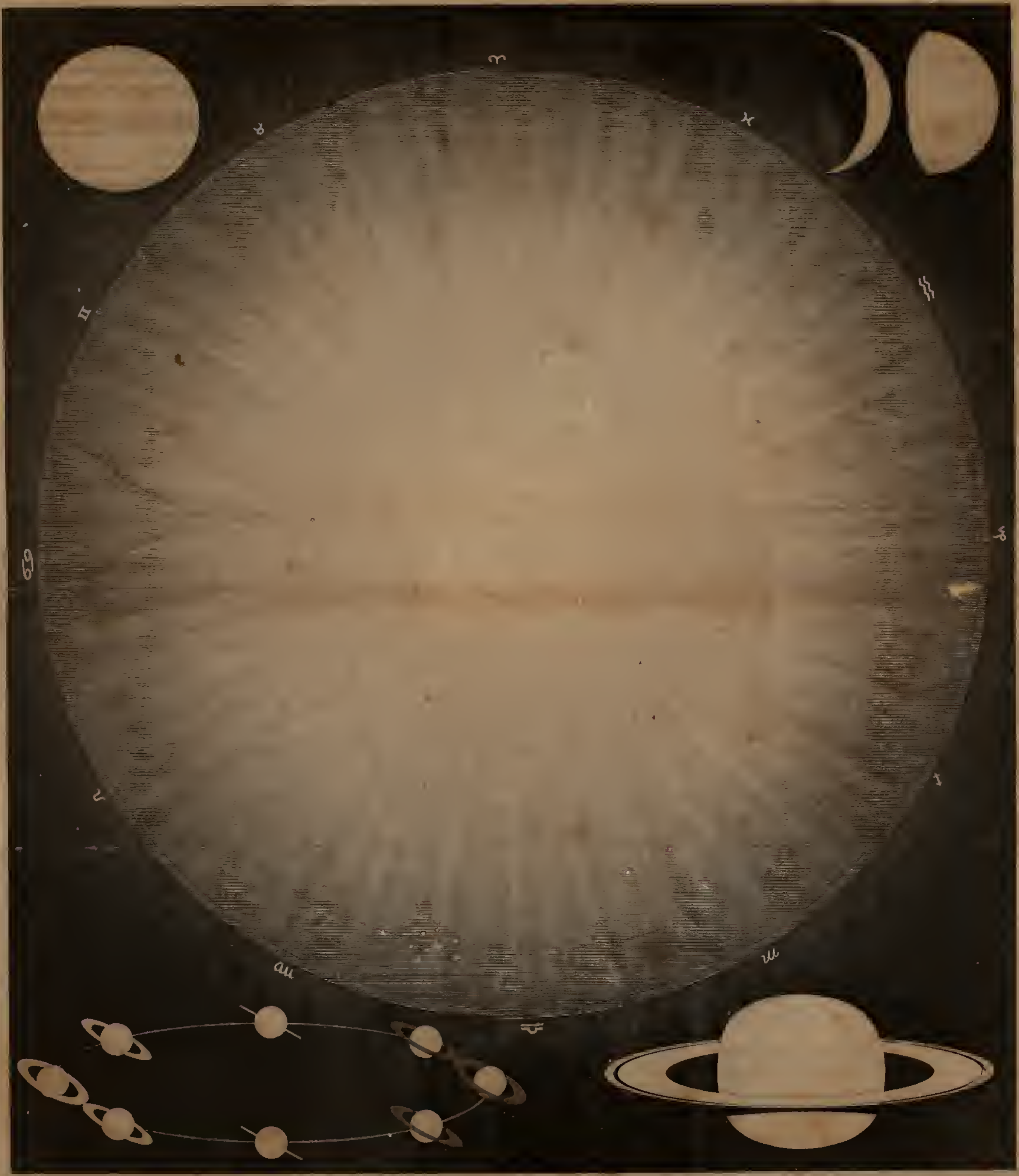

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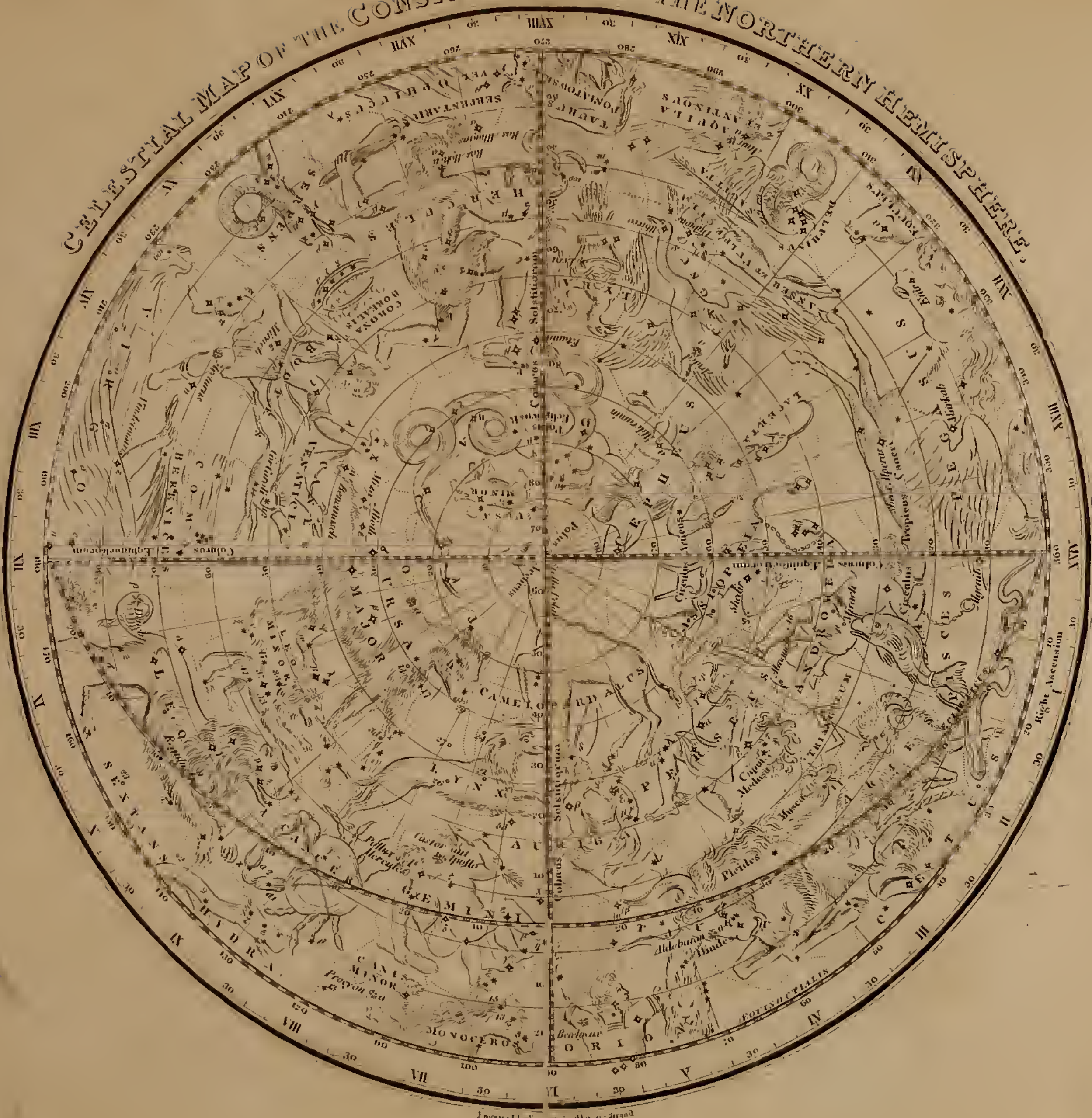

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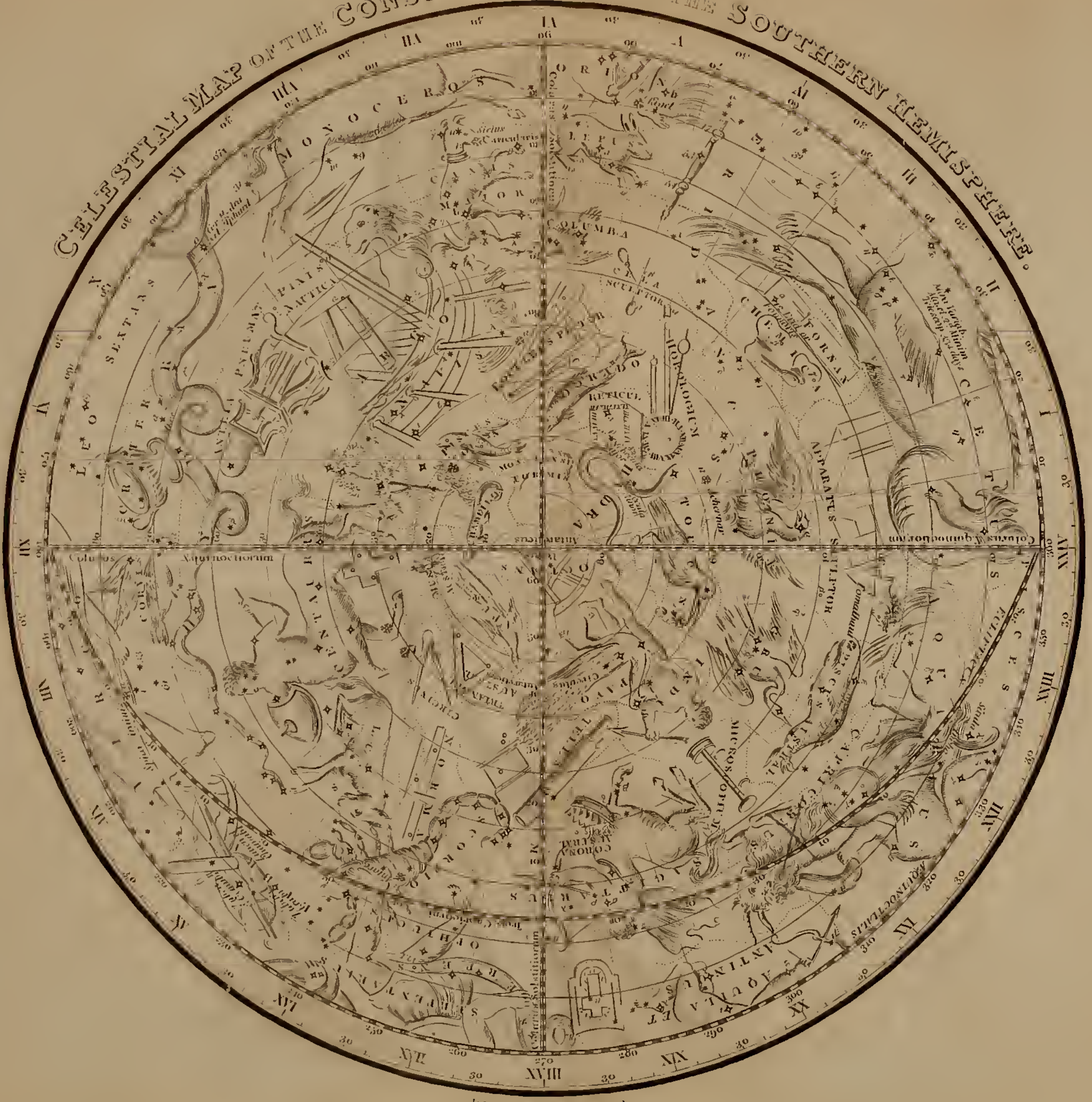

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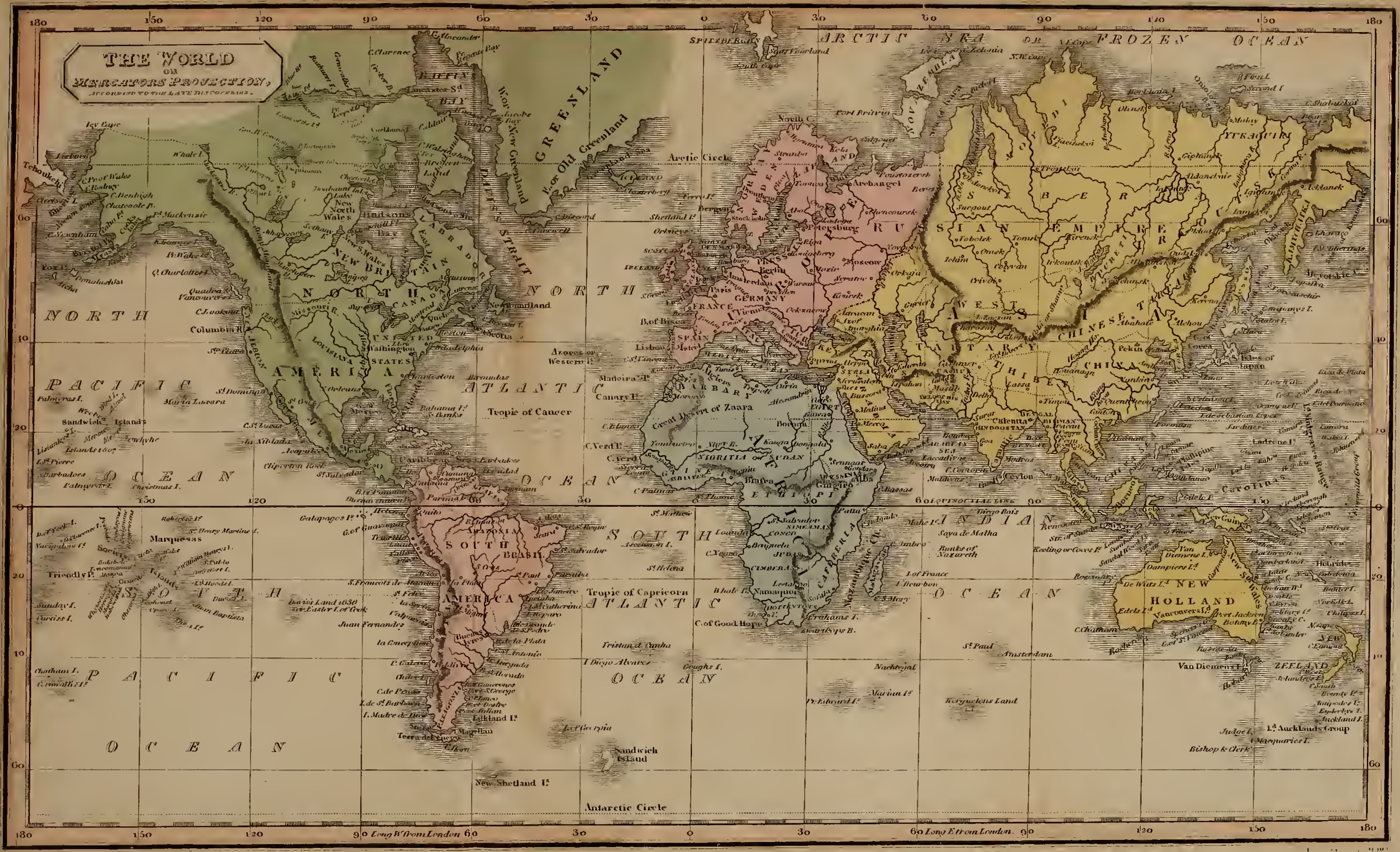

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